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ABSTRACT

The State Research Coordination Units (RCU's) are in an optimum position to provide linkage between the Educational Resources Information Center (ERIC) and its users as part of a comprehensive vocational-technical education information dissemination system. Realizing this, the Center for Vocational and Technical Education developed this guide with the assistance of RCU personnel. The Guide offers a means of facilitating the information dissemination provision of the Vocational Education Act Amendments of 1968, strengthened by the development of an effective linkage with ERIC and the ERIC Clearinghouse on Vocational and Technical Education, greater knowledge of the total system of participants, and attention to sound principles of program planning and operation. An overview of the problem, guiding principles, essential planning considerations, and steps in implementation are included. Professional personnel should find the guide flexible enough to permit use at different levels and stages of information dissemination efforts. Appendixes and attachments help explain the uses and resources of ERIC. (CD)

GUIDE FOR STATE VOCATIONAL-TECHNICAL EDUCATION INFORMATION DISSEMINATION SYSTEMS

THE CENTER FOR VOCATIONAL AND TECHNICAL EDUCATION
THE OHIO STATE UNIVERSITY
1900 Kenny Rd., Columbus, Ohio, 43210

Research and Development Series No. 47

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The Center for Vocational and Technical Education has been established as an independent unit on The Ohio State University campus with a grant from the Division of Comprehensive and Vocational Education Research, U.S. Office of Education. It serves a catalytic role in establishing consortia to focus on relevant problems in vocational and technical education. The Center is comprehensive in its commitment and responsibility, multidisciplinary in its approach, and interinstitutional in its program.

The major objectives of The Center follow:

1. To provide continuing reappraisal of the role and function of vocational and technical education in our democratic society;

2. To stimulate and strengthen state, regional, and national programs of applied research and development directed toward the solution of pressing problems in vocational and technical education;

3. To encourage the development of research to improve vocational and technical education in institutions of higher education and other appropriate settings;

4. To conduct research studies directed toward the development of new knowledge and new applications of existing knowledge in vocational and technical education;

5. To upgrade vocational education leadership (state supervisors, teacher educators, research specialists, and others) through an advanced study and in-service education program;

6. To provide a national information retrieval, storage, and dissemination system for vocational and technical education linked with the Educational Resources Information Center located in the U.S. Office of Education.

RESEARCH AND DEVELOPMENT
SERIES NO. 47

GUIDE FOR STATE VOCATIONAL-TECHNICAL EDUCATION INFORMATION DISSEMINATION SYSTEMS

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U.S. DEPARTMENT OF
HEALTH, EDUCATION AND WELFARE

Office of Education
Bureau of Research

PREFACE

The Educational Resources Information Center (ERIC) was established by the U.S. Office of Education to meet information needs created by new developments in education, a burgeoning body of literature reporting these developments, and the lack of an organized and efficient dissemination system. A program was evolved for acquisition, selection, storage, retrieval, analysis, and dissemination of these materials. Thus, ERIC provides a network of clearinghouses in substantive educational areas which acquire and process documents. These are announced in *Research in Education* (RIE).[1] The full-text of most ERIC documents is available in microfiche or hard copy form through the ERIC Document Reproduction Service (EDRS) or in original form from the issuing source. Clearinghouses also fulfill an essential role in analysis of information.

The ERIC Clearinghouse on Vocational and Technical Education has substantive focus on vocational and technical education and related fields and is a component of The Center for Vocational and Technical Education located at The Ohio State University in Columbus, Ohio. The Clearinghouse, often designated as VT-ERIC, is contracted by Central ERIC (C-ERIC) in the U.S. Office of Education and its activities are coordinated with those of other ERIC Clearinghouses.

A fundamental concept in information systems is to move contact and services as close to the potential user as possible. Thus, a national system requires linkages which will provide this interpersonal relationship between the system and its users. State Research Coordination Units (RCU's) are the logical agencies to provide this linkage for vocational-technical educators; thus, The Center has assisted the RCU's in optimizing their linking role in a comprehensive vocational-technical education information dissemination system. Accordingly, a national conference of RCU personnel was held in October, 1967 to explore the implications of the RCU's information dissemination role. Following this national conference, an *ad hoc* committee of RCU personnel was formed to develop guidelines for state vocational-technical

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[1] *Research in Education* is published 12 times a year. The first issue was No. 1, November 1966. Subscription: Domestic $21.00 a year; foreign $5.25 additional. Single copy: Domestic $1.75. Send check or money order (no stamps) to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

education dissemination systems coordinated with the national information system for research and related resources (ERIC). This committee developed a set of guidelines which became the basis for an operations manual. The work of this committee included individual writing, clearinghouse staff editing, committee reviewing and staff revision.

Drafts of original materials were widely circulated among Research Coordination Unit directors and state directors of vocational education. At meetings in Atlanta, Georgia; Madison, Wisconsin; and Dallas, Texas, 33 RCU personnel from 27 states and one territory had opportunity to offer suggestions for improvement of the documents. Consolidation of guidelines and operations manual into the *Guide* was the result of recommendations by a number of RCU personnel.

The Vocational Education Act Amendments of 1968 included explicit provisions for the dissemination of information which would facilitate improvement of vocational-technical education. The *Guide* offers a means of facilitating this provision of the Act Amendments by providing Research Coordination Unit personnel with specific procedures for information dissemination services within a state. It was judged that this function could be strengthened by development of an effective linkage with ERIC and VT-ERIC, greater knowledge of the total system by participants, and attention to sound principles of program planning and operation. Data-based information systems, while not feasible to include now, may later be articulated with this document-based dissemination system.

It was recognized from the outset that a vocational-technical education information dissemination system should not operate independently of other information dissemination services within a state or the nation. Among the primary functions of State Research Coordination Units has been the stimulation, coordination, and dissemination of research. Where there is need within a state for an information dissemination system for vocational-technical education, the Research Coordination Unit probably is the logical agency to take responsibility for its establishment. In some states where an organized information dissemination system is lacking, the development of such a system for vocational-technical education may serve as the forerunner of a more complete information dissemination system for all of education. In other states, the development of a subsystem with focus upon vocational and technical education will be a part of a broader effort for all of education. Since the vocational-technical education information dissemination system will eventually be a major component of a larger system, it is essential that it be established on sound principles and effectively utilize the Educational Resources Information Center (ERIC), related agencies, and other systems.

Special recognition for development of the *Guide* should go to Research Coordination Unit personnel on the *ad hoc* committee which included Kenneth Densley, California; George Robinson, Kansas; Rudolph Girandola, New Jersey; Joseph Clary, North Carolina; William Stevenson, Oklahoma; and Roland Krogstad, Wisconsin. Special appreciation is extended to state directors of vocational education who supported the work of the *ad hoc* committee.

Technical reviews by Thomas Clemens, Chief, Practice Improvement Division (USOE/NCEC); Robert E. Booth, Professor and Chairman, Department of Library Science, Wayne State University; and Edward Summers, formerly Director, ERIC Clearinghouse on Reading, Indiana University, are gratefully acknowledged.

Joel H. Magisos, Information Services Coordinator at The Center, and Celianna I. Taylor, Senior Research Associate in the Department of Computer and Information Science and formerly Information Services Coordinator at The Center, served as ex officio members of the *ad hoc* committee. In this capacity, they synthesized contributions, wrote major sections of the *Guide*, managed review and revision, and prepared the present version.

This publication should not be viewed as a complete and tested product but as a working document which should serve to guide initial efforts in development of an information dissemination system. Suggestions and comments are solicited toward the improvement of the *Guide* and attainment of the ultimate goal of effective state vocational-technical education information dissemination systems.

Robert E. Taylor
Director
The Center for Vocational
and Technical Education

INTRODUCTION

The Guide for State Vocational-Technical Education Information Dissemination Systems was developed upon the basis of certain premises:

1. Dissemination and utilization of knowledge, in its broadest meaning, require deliberate mechanisms (i.e., information dissemination systems) which will assist in effecting the transfer of information.

2. The information dissemination system should be planned, operated, and evaluated in a cyclical pattern to insure continuous improvement.

3. The objectives of the information dissemination system should be based upon the information needs derived from the significant problems of important user groups.

4. The operation and evaluation of the information dissemination system should be supportive of the objectives.

5. The conduct of a state information dissemination system is most effective and efficient when linked and articulated with an appropriate larger information system.

A model (Figure II-1), developed by clearinghouse personnel, illustrated that random and unidentified individuals need information which assists in the solution of their problems and that the majority of individuals would receive satisfactory assistance through products and services designed for the groups with which these individuals identify. The elements of the system identified in this model became the base for development of this *Guide*. The first chapter, developed at the recommendation of reviewers of a preliminary edition, presents an overview of the information problem; the education community; information systems; and dissemination and utilization. Chapter II sets forth the guiding principles from which the *Guide* was developed. The third chapter outlines the essential considerations in planning an information dissemination system. The fourth chapter describes the implementation of the plan and is organized into the following 10 sections:

Objectives
Users
Problems
Services

Products
Locations
Equipment and Facilities
Administering and Operating Activities
Resources
Evaluation

The *Guide* concerns a system serving vocational-technical educators; therefore, it is necessary to specify the requirements that must be met to be compatible with the larger state and national systems. Flexibility in procedural requirements is still feasible in the application of system alternatives. The skillful articulation of system compatibility requirements and innovative applications will improve the effectiveness of the system to respond to user needs on an interpersonal basis. Professional personnel who use the *Guide* should find enough flexibility existent to permit use at different levels and stages of dissemination efforts, all within the framework of the national information system for education (ERIC).

This first edition reflects the inputs of a review team which had no prior involvement in development of the *Guide*, but which had competence for judging its relevance, usefulness, and technical accuracy. In pursuit of excellence for state vocational-technical education information dissemination systems, it is anticipated that the *Guide* will be updated from time to time.

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CHAPTER I
OVERVIEW

THE INFORMATION PROBLEM

Information is found in a myriad of sources such as pictures, films, microforms, tapes, printed pages, recordings, computer storage, and other electronic devices. Through these devices, information is recorded and used by individuals and groups in a variety of ways for a variety of purposes. The term information, is generally thought of as facts, data, or knowledge obtained from investigation, study, or instruction; however, when used in relation to activities in a particular discipline, the term takes on a special connotation or meaning. For example, in the field of engineering there has been concern with the communication of information for many years. The emphasis has been on the communication problem whereby a message that is selected at one point is reproduced either exactly or approximately at another point. A model which symbolically represents the communication system was evolved (Figure I-1).

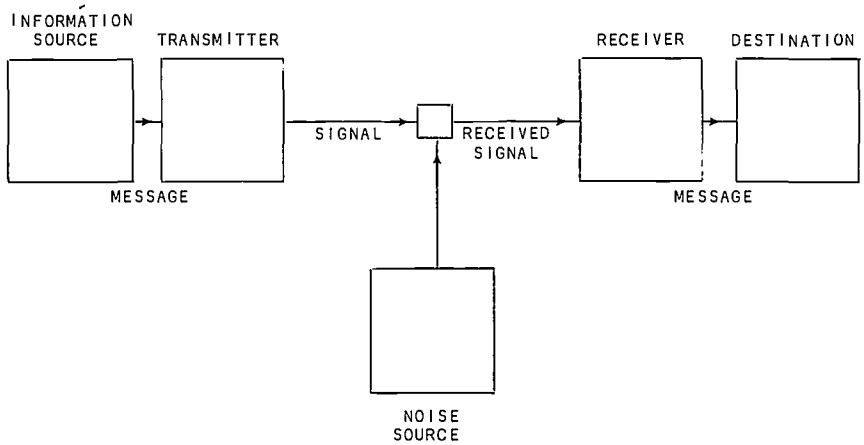

FIGURE I-1. Schematic Diagram of a General Communication System[1]

[1]Claude E. Shannon and Warren Weaver, *The Mathematical Theory of Communication* (Urbana: University of Illinois Press, 1949), pp. 98-99.

An explanation of the diagram in Figure I-1 follows:

> The information source selects a desired message out of a set of possible messages. . . . The selected message may consist of written or spoken words, or of pictures, music, etc.
>
> The transmitter changes this message into the signal which is actually sent over the communication channel from the transmitter to the receiver. In the case of telephony, the channel is a wire, the signal a varying electrical current on this wire; the transmitter is the set of devices (telephone transmitter, etc.) which change the sound pressure of the voice into the varying electrical current. In telegraphy, the transmitter codes written words into sequences of interrupted currents of varying lengths (dots, dashes, spaces). In oral speech, the information source is the brain, the transmitter is the voice mechanism producing the varying sound pressure (the signal) which is transmitted through the air (the channel). In radio, the channel is simply space (or the aether, if any one still prefers that antiquated and misleading word), and the signal is the electromagnetic wave which is transmitted.
>
> The receiver is a sort of inverse transmitter, changing the transmitted signal back into a message, and sending this message on to the destination. When I talk to you, my brain is the information source, yours the destination; my vocal system is the transmitter, and your ear and the associated eighth nerve is the receiver.
>
> In the process of being transmitted, it is unfortunately characteristic that certain things are added to the signal which were not intended by the information source. These unwanted additions may be distortions of sound (in telephony, for example) or static (in radio), or distortions in shape or shading of picture (television), or errors in transmission (telegraphy or facsimile), etc. All of these changes in the transmitted signal are called noise.[2]

Research in this area is concerned primarily with the problems related to transmittal, not with the context or meaning of the message. It is principally concerned with the probability of receipt of any particular message under various conditions of transmittal.

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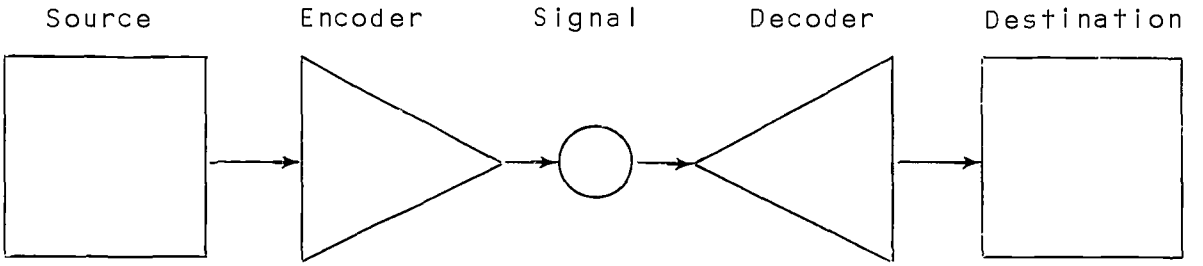
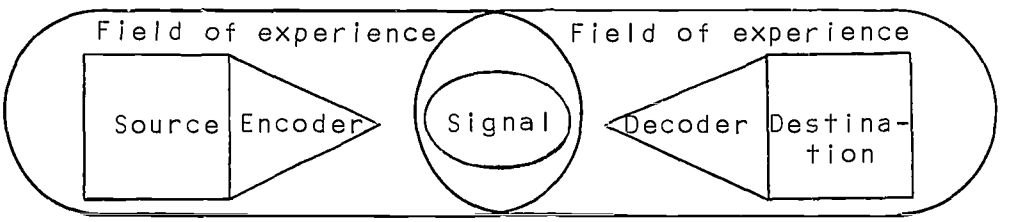
[2] *Ibid.*

The model evolved by Shannon has been applied to the process of mass communication. Schramm illustrates this application to communication by human beings.[3] This is represented in the following manner.



In explaining how communication by human beings works, Schramm states, "When we communicate we are trying to establish a 'commonness' with someone. That is, we are trying to share information, an idea, or an attitude."[4] This information is encoded by an individual, or a group that is both the source and the encoder; the language used is the signal; the decoder and destination is another person or group. This human communication system can break down for a number of reasons. The sender or source may not have adequate or clear information; he may transmit the information inaccurately, too slowly, or too rapidly. The receiver may not be able to decode the message or may not understand it in the context meant by the sender. Schramm points out that the sender and receiver must be in tune. They must have a common field of experience in order to communicate. Schramm illustrates this concept with the following diagram.[5]



[3]Wilbur Schramm, ed., *The Process and Effects of Mass Communication* (Urbana: University of Illinois Press, 1954), pp. 3-26.

[4]*Ibid.*, p. 3.

[5]*Ibid.*, p. 6.

If this common field exists, the receiver of the message reverses the process in communicating back to the original sender. This return process is called "feedback." Schramm points out that this process is the same in mass communication but the elements in the process are different.

A new field called information science has been evolving. Professionals in this field are concerned with the properties, organization, manipulation, structure, control, and use of information. They are also concerned with information systems, their design, components, operation, and evaluation. In order to analyze relationships which could be used to generate principles of information flow and transfer, a model (Figure I-2) of a generalized information system has been developed by Yovits and Ernst.[6] Within the context of this model, information is defined as data of value in decision-making.

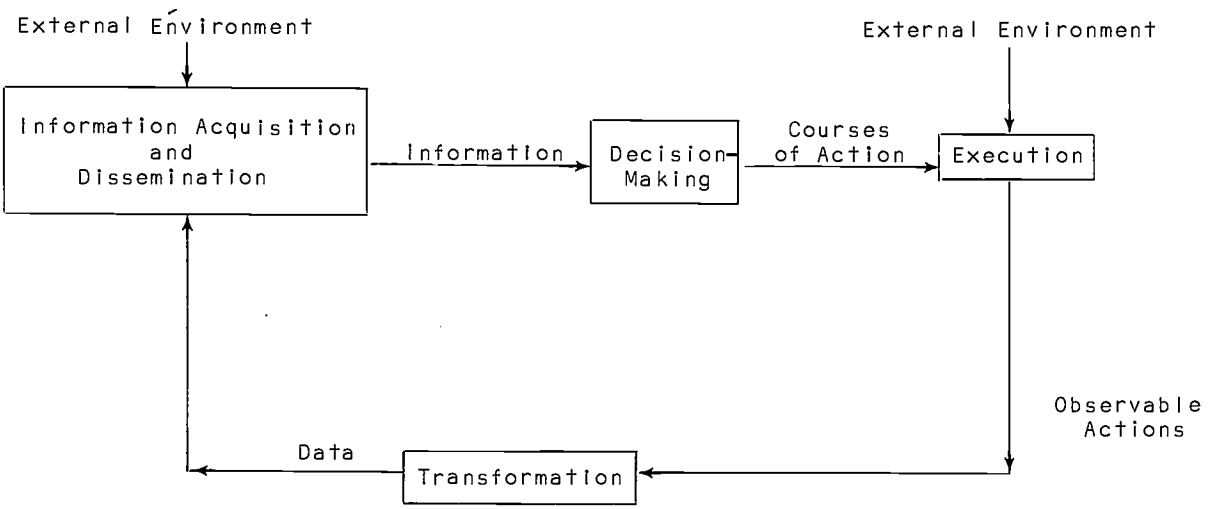


FIGURE I-2. A Generalized Information System[7]

A description of the model follows:

> The system is comprised of four essential functions. There is an Information Acquisition and Dissemination function (IAD), a Decision-Making function (DM), an Execution function (E), and a Transformation function (T) . . .

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[6]M. C. Yovits and R. L. Ernst, *Generalized Information Systems: Some Consequences for Information Transfer* (Columbus, Ohio: The Ohio State University, Computer and Information Science Research Center, 1968), (OSU-CISRC-TR-68-1).

[7]*Ibid.*, p. 42.

> The DM function represents any system component accepting an input from the IAD, and providing an output to E. The DM may be an individual person, an organization, a man-machine system or simply a machine system. In all of these cases, the DM transforms information into courses of action which are in turn transformed into observable actions. The input to the DM is information, some of which may be stored or held in memory. The DM makes decisions on the basis of the information available at some particular time. However, it is assumed that decisions are always made individually, serially, sequentially, or in parallel. Of course, the decision-making process may be delayed. This is usually the case when more information is necessary. By and large, however, the decision-maker is responsible for the generation of observable actions and will eventually make decisions that will lead to these actions . . .
>
> A very significant point concerns the closing of the feedback loop to the DM. In any system this loop must be closed to provide a basis for retaining or altering the courses of action disseminated and it is only on this basis of closure that the DM is able to refine or alter decisions intelligently. Such feedback is always present whether or not it is explicitly considered.[8]

We now have a model which conceptualizes the flow of information from the point of acquisition through the activities of storing, retrieving, disseminating, decision-making, converting decisions into observable actions through the execution function, and measuring these actions which provides a means of collecting data that are transformations of the observable actions. This data is disseminated to the decision-maker for refinement or alteration of decisions.

It is essential to realize that subsystems are necessary to this generalized information system, each with their own models. There are also external systems involving activities such as the publication of information. These internal subsystems and external systems introduce variables that impinge upon the generalized information system model. If all the pertinent systems are not well articulated, the information flow may stop or be diverted, or the information may be inaccurately transmitted.

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[8]Marshall C. Yovits, *Information Science: Toward the Development of a True Scientific Discipline*, American Documentation, 20:4 (October, 1969), pp. 371-372.

Another important factor affecting the flow and use of information is the greatly increased volume of information being generated. The sheer bulk to be sorted and compiled inhibits its use. This has led to the use of computers in handling these massive amounts of information. This development has caused some people to equate information handling with the handling of information by computers. Actually, the computer is an important tool in manipulating, storing, and retrieving great masses of information, but it must be kept in proper perspective in discussions of information handling.

What kinds of data do we find being input into computers? Typically, great masses of figures and numbers are programmed into a computer to save time in record keeping. Banks, department stores, universities, and library order departments utilize computers for this purpose. Raw data which can be manipulated to produce new information for research and other purposes are input into the computer. Computer assisted instruction is another application. In the new field of computer graphics, a computer coupled to a cathode-ray display tube and a light beam pencil can be used to solve design problems. Many groups are investigating the computer manipulation of data to facilitate management decisions.

The use of the computer as a tool to obtain better management information is becoming increasingly important in city and county school systems as well as state departments of education. One example is the effort resulting from the contracts between San Mateo County Superintendent of Schools and The MITRE Corporation in conjunction with operation PEP (Prepare Educational Planners).[9] Reports (see Bibliography) were prepared for the California educational administrators participating in the "Executive Information Systems" unit of the instructional program of Operation PEP. Essentially, this effort was designed to show the educational administrator several methods of organizing his management reporting system so it can be programmed into the computer. The computer effects manipulations and compilations that are more comprehensive, accurate, and extensive than before available for decisions. This is a plan to input, manipulate, store, and retrieve data on operations, financing, and pupil-personnel. This kind of system is generally known as a data retrieval system which retrieves data displayed as words or numbers.

Equally important to the decision-maker, researcher, and teacher in all roles is the accessibility of the concepts to be found recorded in research reports, conference proceedings,

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[9]Operation PEP is funded by USOE Grant under Title III of the Elementary Secondary Education Act of 1965 (Pub. L. 89-10).

instructional materials, books, etc. The same function of input, manipulation, storage, and retrieval is performed by the computer. In this instance the data are:

bibliographical citations,

index terms,

abstracts, and

text.

This kind of system is generally known as an information retrieval system which informs the user of the existence and whereabouts of documents or other forms of recorded media relating to his request. A further explanation of the information retrieval system by Lancaster follows:

> An information retrieval system may retrieve complete texts of documents, document surrogates (such as abstracts), or names and addresses of documents (i.e., full bibliographic citations). A system that ultimately provides the user with full document texts is properly called a document retrieval system, whereas a system that presents only citations is a reference retrieval system. A retrieval system will usually operate in several stages (e.g., its first output may be in the form of citations from which the requester can make a selection). Subsequently, the requester can ask that the complete texts of these selected items be presented. Alternatively, the sequence of responses may be (a) document numbers, (b) citations, and (c) full texts.[10]

It should be noted that the data retrieval system and information retrieval system have been manual systems in the past. In some instances these should remain manual systems; however, it is now becoming economically feasible to utilize a computer through such techniques as time-sharing, adaptation of existent programs, and magnetic tape files developed by others. The next decade will bring about a rapid growth in use of the computer, particularly in information systems.

Information retrieval system personnel are still coping with the problems of devising schemes to store bibliographic information, index terms, abstracts, and text so this information can be retrieved for multiple purposes when needed. This activity has

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[10]Wilfried F. Lancaster, *Information Retrieval Systems* (New York, New York: Wiley, 1968), p. 1.

overshadowed dissemination of information, an important function of information systems. In general, information dissemination systems should serve identified groups which have common interests and common information needs. This will provide some of the major cost effectiveness, cohesiveness of substantive coverage, professional interaction, and personal interface between user and system. Examples of user groups that actively use information include:

Professional groups	Political groups
Scientific groups	Business groups
Trade groups	Military groups
Labor groups	Religious groups
Industrial-technical groups	Recreational groups

THE EDUCATION COMMUNITY AND INFORMATION SYSTEMS

Among professional groups, education has one of the largest bodies of professional personnel. An overview of the field of education showing its goal setters, implementers of goals, and its products is graphically displayed in Figure I-3. Available are information banks and information systems which users from these groups may draw upon; but, it is information dissemination to which this guide addresses itself.

The organizational units which develop and/or service these document and/or data banks and systems are primarily:

Clearinghouses	Information centers
Data centers	Information dissemination centers
Information agencies	Libraries
Information analysis centers	Media centers

All of these units have some similar objectives, but each one also has its own unique objectives. User groups to be served are the same in a number of instances; however, the priority ranking of groups which these units serve is different and the kind of information supplied is usually different. A user might seek information which would have bearing upon the problem he is working on from several units. These units may be found in both public and private domains. Sometimes units are within a professional association or a research and development organization and serve only

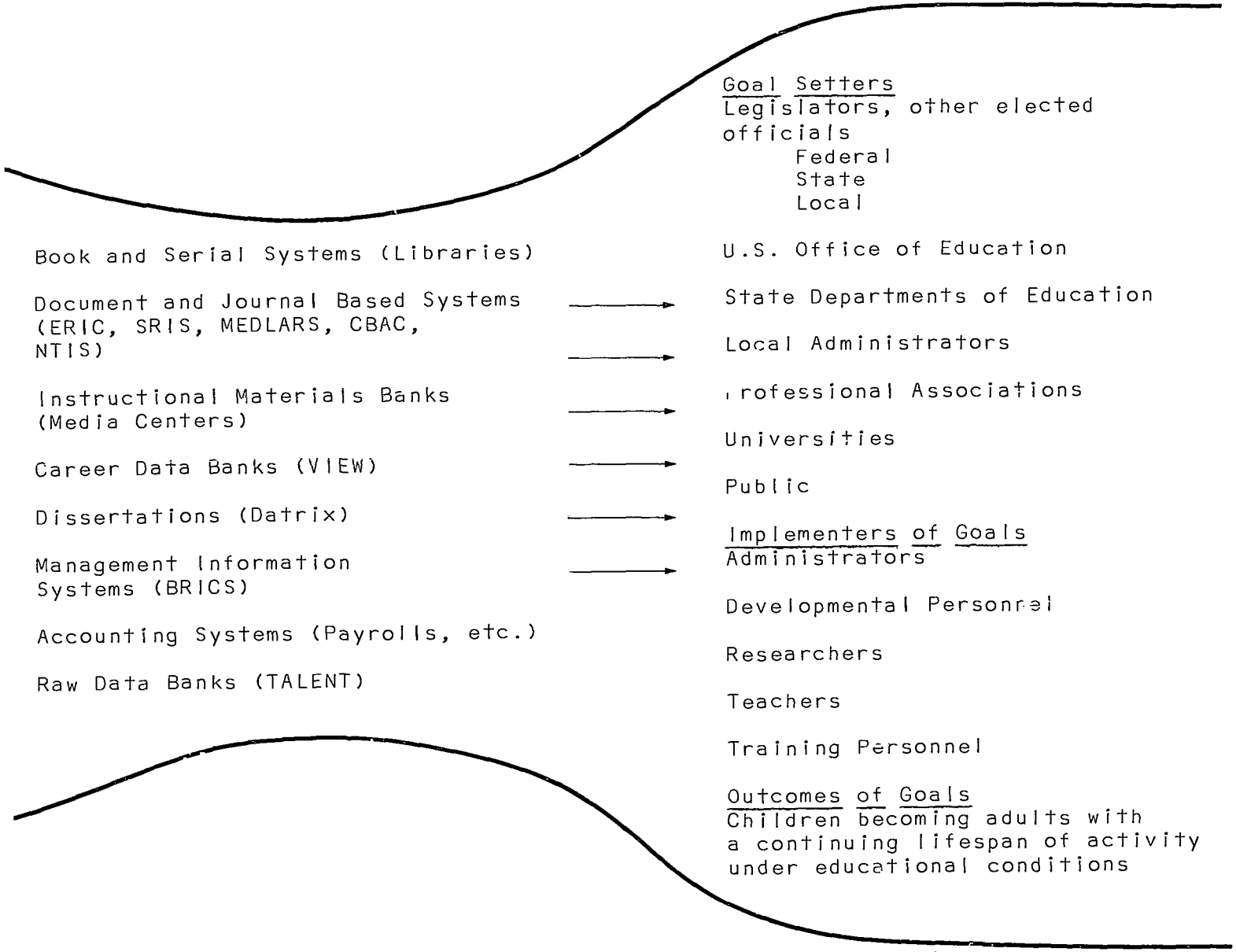

FIGURE I-3. Information Resource Systems Serving the Field of Education

their own membership or clientele. In other instances, a unit may serve any user group which seeks assistance within the scope of information and activity of that unit. The kind of information and its availability must be determined for each information system and data bank.

Within vocational-technical education, the primary units concerned with information dissemination activities specifically for vocational-technical educators are the ERIC Clearinghouse on Vocational and Technical Education (VT-ERIC), and the State Research Coordination Units (RCU). As part of the ERIC system, VT-ERIC collects, abstracts, indexes, and disseminates research findings and related educational information. In general, actual substantive content for vocational and technical education courses and programs is included in the system only when it has been organized for instructional purposes. Further, VT-ERIC conducts an information analysis program, endeavors to build appropriate subsystems, and informs potential users about the total system capability.

State Research Coordination Units are responsible for dissemination of information within the states. Each state has the option of broad or narrow interpretation of dissemination, and of developing a program that is appropriate for that state. This is evidenced by the State Plans which provide for a State Research Coordination Unit and describe the staff, organization and functions with respect to vocational education research; personnel training programs; developmental, experimental, or pilot programs; and dissemination activities. Thus, Central ERIC, VT-ERIC, and the RCU's constitute the basic elements of a multilevel information dissemination program for vocational and technical education.

DISSEMINATION AND UTILIZATION

Recently a sharper distinction has been drawn between dissemination and utilization. Mere dispersal of concepts or sending of information to educators does not assure utilization. Little is known about how and what kinds of information the motivated user selects, for what purpose and use, and the impact or effectiveness of its use. At present, considerable research is being conducted on the transfer or flow of information in the field of education. According to Havelock, "Dissemination and Utilization (D & U) is viewed as a transfer of messages by various media between resource systems and users."[11] In the cited report, Havelock states that "the principle models of D & U employed by most authors can be grouped under three perspectives identified

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[11]Ronald G. Havelock, *et al., A Comparative Study of the Literature on the Dissemination and Utilization of Scientific Knowledge* (Washington, D.C.: DHEW, Bureau of Research, 1969), (ED 029 171), p. iv.

as: 1) Research, Development, and Diffusion; 2) Social Interaction; 3) Problem Solving."[12] Havelock points out that the R & D perspective is essentially a linear model (Figure I-4)[13] and moves from research to development to a product that is disseminated to a more or less clearly defined audience. The cyclical process of design, evaluation, feedback, and redesign sometimes makes this model appear cyclical; however, it is essentially a linear model in respect to the product disseminated. It has been assumed that the product would be used and would bring about change if it were disseminated through the right channel, in the right way, at the right time.

The social interaction perspective (Figure I-5)[14] comes from anthropological studies of the diffusion of cultural traits. The concern here is the measurement of the flow of a stable element through a social system over time. From these research studies, a theoretical or conceptual framework of diffusion has evolved. A simplified interpretation of this theory follows.

1. There are concepts which are usually in the form of an identifiable practice or product.

2. These concepts are communicated from one individual to another.

3. This activity occurs in a social system.

4. It occurs over time.

5. The concepts are adopted, adapted, or rejected.

The stages that an individual goes through in adopting and using a concept, product or practice have been studied by Holmberg in the field of anthropology as cited by Rogers,[15] by Coleman *et al.*[16] in the field of medical sociology, Wilkening,[17] and Rogers[18] (and others) in the field of agriculture.

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[12] *Ibid.*

[13] *Ibid.*, pp. 11-16.

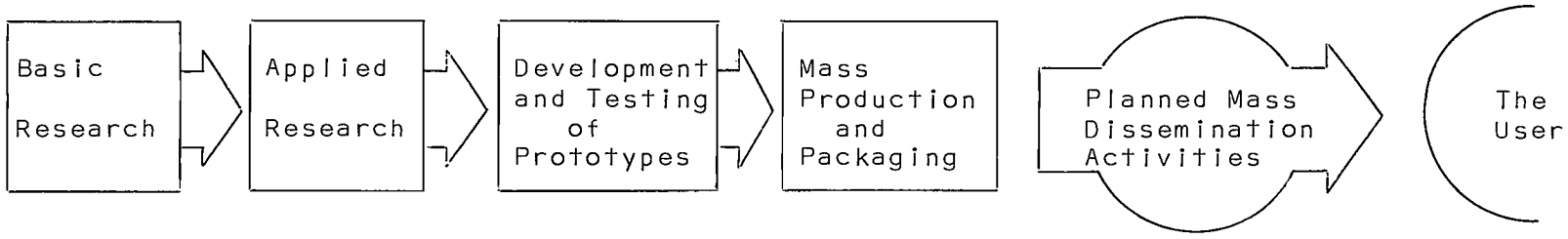
[14] *Ibid.*, pp. 11-18.

[15] Everett M. Rogers, *Diffusion of Innovations* (New York, New York: The Free Press of Glencoe, Inc., 1962).

[16] J. S. Coleman, E. Katz, and H. Menzel, *Doctors and Drugs* (Indianapolis: Bobbs Merrill, 1966).

[17] Eugene A. Wilkening, *The Communication of Ideas on Innovation and of Communication to the Public* (Stanford University: School for Communications Research, 1962), pp. 39-60.

[18] Rogers, *op. cit.*, 1962.

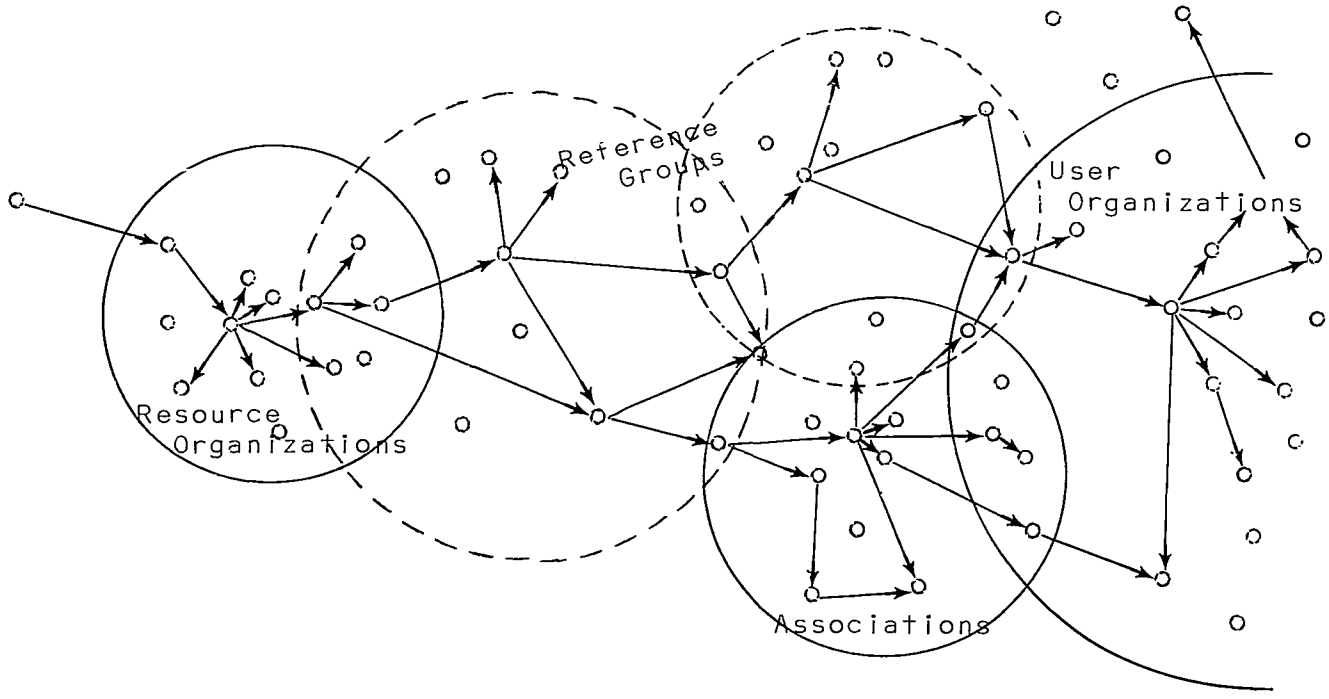


Major Points Stressed: Rational Process
Planning Necessary
Division of Labor
High investment pays off in quality, quantity, long term benefit, and capacity to reach mass audience.

Spokesmen: Henry M. Brickell, David Clark, Egon Guba

Prototypes: Industrial R & D, U.S. Agricultural Research and Extension System

FIGURE I-4. The Research, Development and Diffusion Perspective



Major Points Stressed: Personal Relationships
Group Memberships and Identifications
Social Structure - Power and Influence Structures
Proximity, Cosmopoliteness
Opinion Leadership Structure

Spokesmen: Everett Rogers, James Coleman, Elihu Katz, Herbert Menzel, Richard Carlson, Paul Mort

Prototypes: Diffusion of innovations in farm practices, spread of new drugs among physicians.

Key: Individuals in the social system.
→ Flow of new knowledge.
Formal organizational structures.
Informal structures.

FIGURE 1-5. The Social Interaction Perspective

The models of adoption evolved by these researchers have some variation but the findings are quite similar. The five stages in the adoption process described by Rogers are:

1. Awareness
   An individual is exposed to and becomes aware of a concept, practice, or product which is characterized as being new, or an innovation.

2. Interest
   The individual seeks more information about the innovation.

3. Evaluation
   The individual mentally applies the innovation to his present and anticipated future situation, and then decides whether or not to try it.

4. Trial
   If the decision is favorable, the individual tries the innovation on a small scale or temporary basis.

5. Adoption
   The results of the trial are considered and the individual decides to adopt, adapt or reject.[19]

Coleman, *et al.* identifies a sixth stage described as integration in which the individual integrates the innovation into his routine.[20]

The problem solver perspective (Figure I-6)[21] is based upon the concept of the user who has a problem which needs to be solved and ends with the satisfaction of this need. Havelock points out the steps in this cycle as follows:

1. Need sensing and articulation.

2. Diagnosis and formulation of the need as a problem to be solved.

3. Identification and search for resources relevant to the problem.

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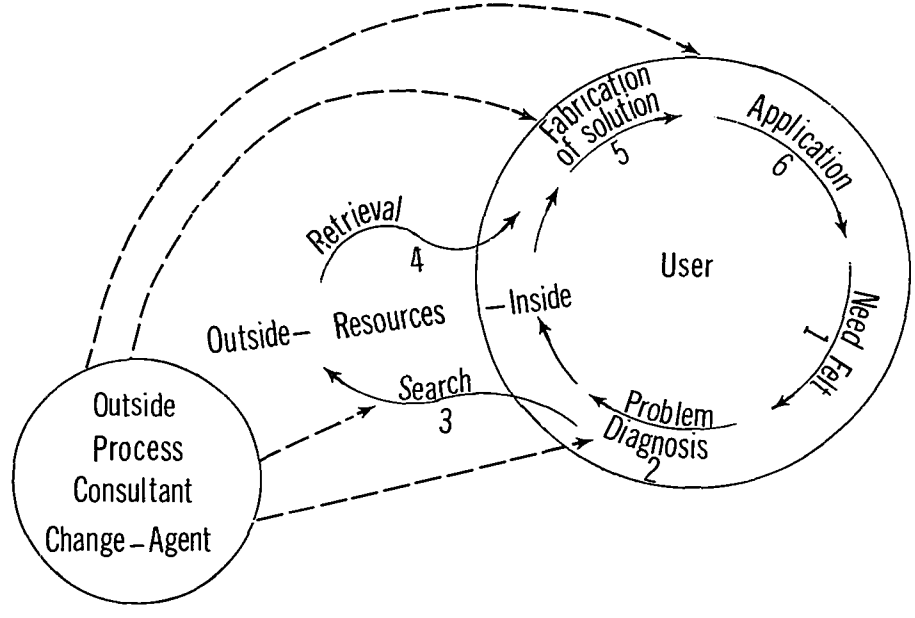
[19] *Ibid.*, Rogers, 1962.

[20] Coleman, Katz, and Menzel, *op. cit.*, 1966.

[21] Havelock, *op. cit.*, 1969, pp. 11-12.



Major Points Stressed: The User's Need is the Paramount Consideration
Diagnosis is Part of the Process
The Outsider is a Catalyst, Consultant, or Collaborator, but the User must find the Solution Himself or See it as His Own
Internal Resources should be fully Utilized
Self-initiated Change has the Firmest Motivational Basis and the Best Prospects for Long-Term Maintenance

Spokesmen: Goodwin Watson, Ronald Lippitt, Herbert Thelen, Matthew Miles, Charles Jung

Prototypes: Organizational self-renewal, mental health consultation.

FIGURE I-6. The Problem Solver Perspective

4. Retrieval of potentially feasible solutions and solution-pertinent ideas.

5. Translation of this retrieved knowledge into specific solutions or solution prototypes.

6. Behavioral try-out or application of the solution to the need, with evaluation of effectiveness being made in terms of need reduction. Presumably, if the solution does not satisfy the need, the cycle begins again.[22]

Havelock proposed that the viewpoints expressed by these models needed to be synthesized and suggested the concept of "linkage" as a possible method. His linkage model is in Figure I-7.[23] The emphasis of this model is on the user as a problem solver who must contact the outside resource system and interact with it so that he gets back relevant information which will help in the solution process.

The resource system in the linkage model is defined as the generator of knowledge. It does not refer to the resources in information systems. To date, the activities and effectiveness of information systems have been discounted in the dissemination and utilization flow since they are thought of as passive storage units which do not enter actively into the transfer of information. With the explosion of knowledge and the vast amounts of information that must be organized and retrieved when needed, the storehouses of knowledge are now being brought actively into the dissemination-utilization process. In addition to the responsibility for selecting, acquiring and storing information so that it can be retrieved for a variety of purposes, there has evolved a responsibility for stimulating the use of the stored information.

In vocational and technical education, provisions of the Vocational Education Act of 1963 (Section 4c) authorized unprecedented levels of funding for research and development.[24] The findings and products of this increased research and development have poured into information data banks and information systems. Alternatives which have bearing upon problems often lie buried in these banks and systems. Several problems in particular still impede the effective use of this information. Achievement of the following will overcome the most serious of these problems:

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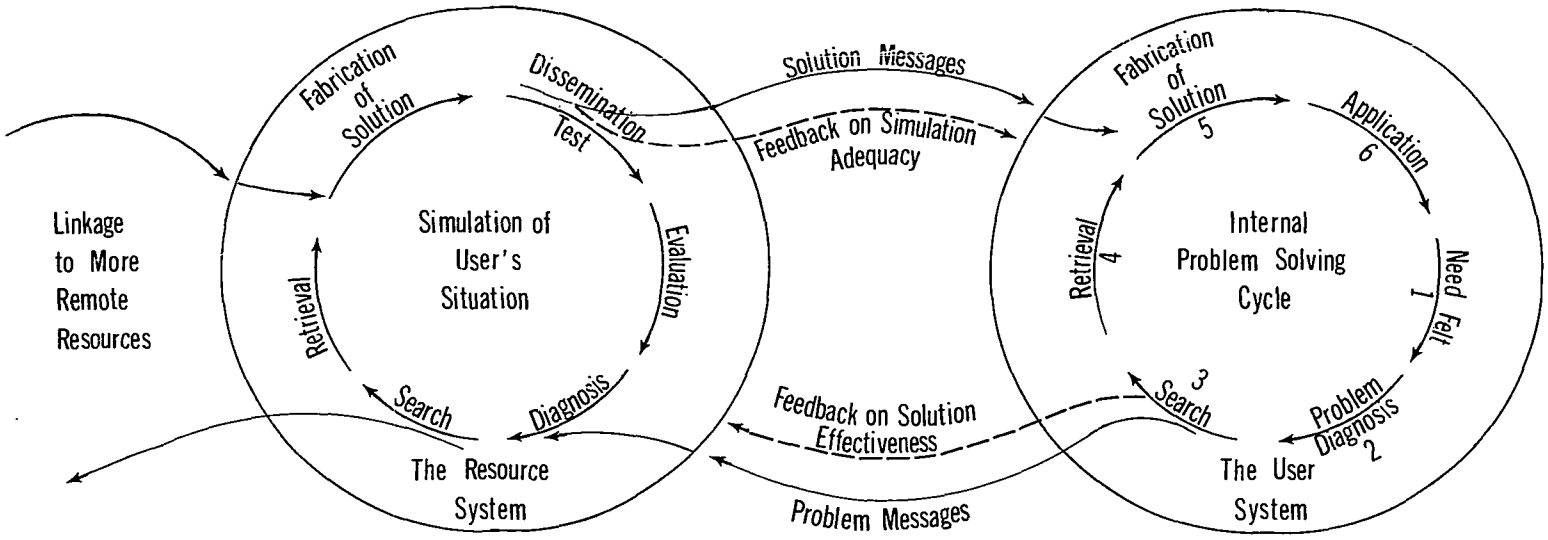
[22] *Ibid.*, Havelock, 1969.

[23] Havelock, *op. cit.*, 1969, pp. 11-16.

[24] *The Vocational Education Act of 1963*, Pub. L. 88-210, 88th Cong., H.R. 4955, 1963.



From the Linkage Perspective:

1. Resource system must recapitulate or adequately simulate the user's problem solving process.
2. The user must be able to understand (and simulate) the research, development, and evaluation processes employed by the resource system in the fabrication of solutions.
3. Resource and user must provide reciprocal feedback.
4. Successful linkage experiences build channels for efficient dissemination.

FIGURE 1-7. The Linkage Process

1. Storing information so it can be retrieved when needed.

2. Translating and/or compacting the huge volume of information for different user groups and different levels of use.

3. Dissemination of pertinent information to a user or user group during the time period (usually a limited time span which may be continuing, intermittent, or singular) that the information is needed.

4. Development of an interpersonal relationship between users and the information-dissemination staff who are linkers to the concepts in the system.

5. Construction of methods to determine the efficiency and effectiveness of the system.

6. Construction of methods to determine the impact and/or usefulness of concepts disseminated.

Research has been initiated on a number of aspects of these problems and some of the findings are just beginning to be utilized by information retrieval systems and information dissemination systems. As these systems become more effective, they will assume a more important role. It is extremely time-consuming and impractical for information users (as individuals or groups) to identify, locate and communicate directly with the generator of knowledge. It has also become impractical for the generator of knowledge to try to communicate with or disseminate findings to users at the point in time when each user needs and wants the information. Further, there is strong evidence the researcher is not equipped as a "disseminator." The generator of knowledge in the field of education may be interested in having his findings utilized and may help develop a plan whereby his specific findings or products are disseminated to a target group or groups. This kind of dissemination activity fulfills part of the objectives and mission of the researcher or developer. The information dissemination system differs from this kind of activity in that it provides the user with alternative concepts and/or related findings and products. Thus, a group that is interested in a particular concept or product should also review alternative findings and products by utilizing appropriate information dissemination systems. Information dissemination systems must take an active role in providing the user of information with pertinent concepts in resource banks and libraries.

A dynamic, or interacting, information dissemination system will provide:

1. A large-scale mechanism for the communication and diffusion of recorded concepts.

2. A neutral ground where many concepts (some of which are conflicting) may be found.

3. An active service program which facilitates the communication flow and transfer of information resulting from research findings; from developmental, experimental, or pilot programs; from training programs; and from other related resources, to the decision-maker (administrator, supervisor, curriculum developer, teacher in classroom, etc.) who implements the findings of research.

4. A feedback system on gaps in knowledge and problems requiring research investigation.

5. An interpersonal relationship between users and linkers to the concepts in the system.

It is important to note that an information dissemination system does not solve problems. It provides identification and location of alternative concepts which have bearing upon a problem while recognizing that the user will have to weigh the alternatives for his situation. In making a decision he may choose to utilize the services of a consultant to assist him in examining alternatives in order to make a decision. The primary role of the information dissemination system is to provide information for decision-making.

CHAPTER II

GUIDING STATEMENTS

INTRODUCTION

An information dissemination system that dynamically interacts with information users concerns itself with dissemination activities, products, and the utilization of information. Therefore, the user of information and his information needs must be central to the design of this system. A model (Figure II-1) was developed at the ERIC Clearinghouse on Vocational and Technical Education in which the user is the central unit and elements are identified that must be brought together in order to initiate and maintain an effective information dissemination system.

This model is based upon the assumption that:

1. Random and unidentified individuals need information which assists in the solution of their problems.

2. These users could receive satisfactory assistance through services and products designed for groups with which these individuals identify.

3. This objective could be achieved through the development of an effective dissemination system which has

   a. objectives which serve to satisfy information needs of user groups and their goals, and support the efficiency of the system;

   b. appropriate multiple locations to satisfy volume of demand and ease of access;

   c. adequate equipment and facilities to maintain services and products;

   d. well designed administering and operating activities and procedures. These include program planning and budgeting; personnel and budget administration; public relations; selecting, acquiring, processing, sorting, and retrieving materials not available in other systems; procedures for: 1) maintaining services, 2) developing identified essential products

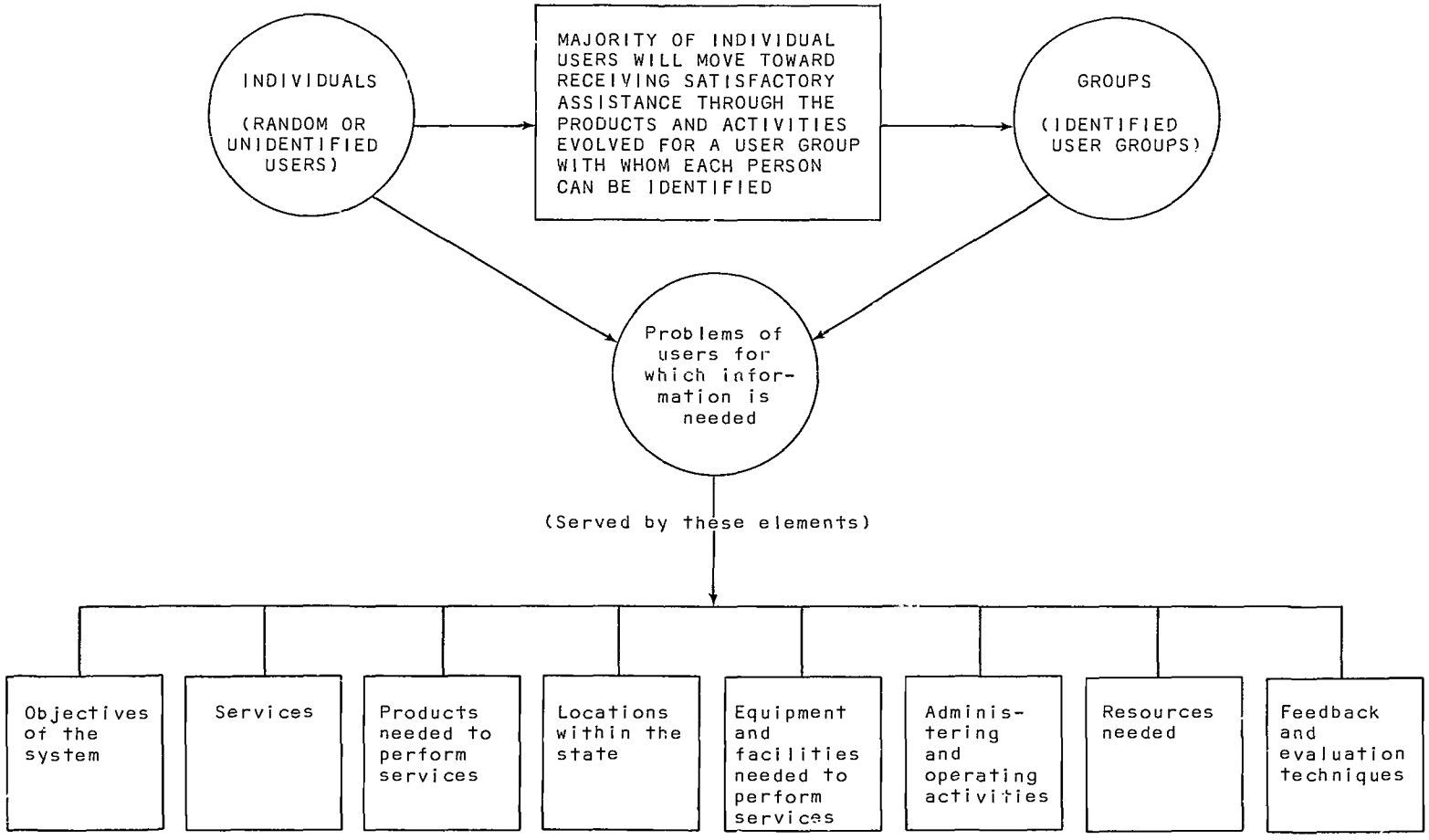


FIGURE II-1. Conceptualization of Information Dissemination System Elements Necessary to Serve Users

not produced by others, 3) maintaining evaluation, and 4) updating the system and its objectives;

e. appropriate feedback loops to reassess and make decisions regarding information system; and

f. evaluation techniques keyed to objectives.

If a consultant were given sufficient funds to make a study which had the purpose of establishing a state system to disseminate research and related information, he could use this model to guide his activities.

Many information dissemination models start with a concept or product to be disseminated. This model starts with the user, his problems, and his information needs. The user is central to the objectives, the program, and all activities of the system. This model makes it essential for the information dissemination system to establish an interpersonal relationship with users and user groups whereby: 1) problems requiring information to assist in their solution can be identified; 2) alternative concepts taken from research evidence and other related findings that have bearing upon these problems are retrieved and disseminated; and 3) the relevancy, usefulness and impact or effectiveness of the concepts disseminated are identified.

Using this model, a set of guiding statements were developed. It was anticipated that these statements would evolve into guiding principles after considerable use and testing.

GUIDING STATEMENTS

OBJECTIVES

1. Long-term objectives and short-term goals of the dissemination system should be developed.

2. Development, review, and updating of objectives should be part of a cyclical program planning process.

3. Identification of problems and servicing of resulting information needs of user groups within the substantive area covered by the information dissemination system should be a primary objective.

4. An advisory body should be enlisted to assist with the development of objectives.

5. Objectives of a state information dissemination system should take into consideration the objectives of the national system

to which it relates, the statutory and regulatory provisions in the state, the organizational and structural variables between and within institutions, and the resources and requirements of the state.

6. The information dissemination system program should be planned, organized, operated, evaluated, and updated upon the basis of short-term and long-term objectives.

7. Evaluation of an information dissemination system should be upon the basis of objectives.

8. Indicators should be identified which are sufficiently precise that assessment of progress can be made.

INDIVIDUAL AND GROUP USERS

1. Individual and group users should be periodically identified, grouped, and classified, and priorities of the established user groups reviewed periodically.

2. Service to group users should be emphasized to lessen repetitive effort and increase resources available for solution of the unique problems of individual users.

3. The information dissemination system should have the capacity to identify the diverse roles of the individual user and have the capability either to serve or to refer the user to an appropriate agency.

4. An information dissemination system should be developed in such a way that an individual is able to identify the levels of access and to use the system by himself.

5. Levels of access into the use of an information dissemination system should be clearly delineated and described for users.

6. Methods of interface with individual users should facilitate effective problem formulation and solution finding.

PROBLEMS AND RESULTING INFORMATION NEEDS

1. Problems and resulting information needs should be identified, grouped, and categorized.

2. Identification of problems and resulting information needs should be a continuous process involving users.

3. Assignment of priorities to problems and resulting information needs is necessary and should involve those to be affected.

4. The information dissemination system should be designed to permit development of products and services in identified problem areas and to provide an interpersonal relationship with users according to appropriate priorities.

SERVICES

1. A variety of services is necessary to meet the diverse problems and information needs of users.

2. Needs of user groups should be the basis for services to be provided within the information dissemination system resources and other available services.

3. Priority should be given to providing services which will impact upon the vocational-technical education program mission.

4. Services of other information agencies should be identified, articulated, and utilized.

5. Legal and fiscal policies of federal and state governments should be considered when planning services.

6. Services for decentralized locations should be well defined and well coordinated with the clearly identified multilevel functions within the total system.

PRODUCTS

1. A variety of products is necessary to meet the diverse problems and information needs of users.

2. Products of ERIC, VT-ERIC, and other ERIC clearinghouses should be utilized.

3. Appropriate products of other information systems should be identified and used.

4. Priority for product development should be related to urgent and crucial user problems and information needs.

5. Needed additional products should be developed by the agency best qualified to do so.

6. Copyrights and other legal aspects of duplication should be honored.

LOCATION

1. Location of an information dissemination system within each state should be upon the bases of: a) location of high priority user groups, the dispersion or density of a user group, the number, level and characteristics of their demands; b) proximity of complimentary information systems, or a comprehensive state information service; c) organizational structure of the sponsoring agency; and d) statutory provisions within the state.

2. Placement of an information dissemination system within the total organizational structure should be at the point where the most effective information dissemination can be performed.

3. Decentralization of an information dissemination system should be based upon considerations of: a) budget, b) cooperative efforts with agencies at other locations, c) level of service feasible, d) volume of information, e) urgency for information, f) frequency of use of materials, g) form of information, h) availability of other sources of information, and i) identified multilevel functions.

4. Storage and retrieval systems maintained at decentralized locations should be compatible with other decentralized locations, all under the direction of or coordinated by the headquarters staff.

EQUIPMENT AND FACILITIES

1. Equipment and facilities should be related to the type of: 1) products handled, 2) services rendered, and 3) users served.

2. Types of equipment acquired and used should be compatible with nationwide developments, notably the Educational Resources Information Center (ERIC) and its system of clearinghouses.

3. Orderly acquisition of equipment within the limits of budget allocations should be based upon stated objectives and priorities.

4. Physical space for an information dissemination system should be determined upon the basis of needs for: 1) personnel, 2) users, 3) equipment, and 4) operations.

5. Use of equipment by users should be supervised in the interest of preserving equipment, enhancing its usefulness, and educating users.

6. General criteria should be established for selection of equipment, and specific criteria should be established for certain items of equipment.

7. Continuous updating of equipment should be accommodated in plans and budgets.

EVALUATION AND FEEDBACK

1. Evaluation should be part of a continuous program planning cycle.

2. Methods of feedback and evaluation which are objective and have local relevance should be employed.

3. Feedback from individual and group users is a key source of data for evaluation.

4. Indicators used for assessment should be compatible with those used in the national system.

5. Evaluation at the state level should be compatible with evaluation of the larger information system (ERIC).

6. Evaluation of the effectiveness of the information dissemination system should be based upon the objectives of the system.

7. External review groups with some representation of user groups should be utilized at appropriate intervals.

8. Improvement of the system should result from evaluation.

9. Periodic evaluation of methods utilized in the feedback and evaluation processes is needed.

RESOURCES

1. Allocation of resources should be congruent with the organizational structure, objectives, and planned level of services and products.

2. Funds should be allocated upon the basis of justified need and scope of operation commensurate with overall policies and regulations.

3. Priorities for allocations of resources should reflect policies, needs, and desired effectiveness.

4. Personnel should be employed who are qualified to perform the services, maintain the system, and improve operations.

ADMINISTERING AND OPERATING ACTIVITIES

1. Planning, organizing, controlling, and updating should be balanced for optimum effectiveness and efficiency of the system.

2. Levels of responsibility and delegation of authority should be identified and assigned.

3. Accountability for responsibilities and application of authority should be clearly understood.

4. A network for acquiring information materials needs to be established within a state by the information dissemination system staff and coordinated with efforts of Central ERIC and VT-ERIC.

5. A system of cataloging information materials which are not included in the national system should be developed and made compatible with the primary national system to which a linkage has been established.

6. Search strategies should be developed to locate information in the system.

7. A systematic and continuing program to train users of the system should be conducted.

8. Information services and products should serve and impact upon high priority users.

9. Uniformity in coding and defining should be sought with the state and national system.

CHAPTER III

PLANNING A STATE VOCATIONAL-TECHNICAL EDUCATION INFORMATION DISSEMINATION SYSTEM

Since 1967, the State Research Coordination Units and the ERIC Clearinghouse for Vocational and Technical Education have cooperated in evolving information dissemination activities which would assist in the diffusion of research and related findings to user groups in vocational and technical education. To assist in the initiation and maintenance of an operational information dissemination system, the items outlined in this chapter bring together some of the essential factors in planning this kind of effort.

OBJECTIVES OF AN INFORMATION DISSEMINATION SYSTEM

The broad objectives and specific contributory sub-objectives outlined in this chapter will be the basis for the material presented in the remainder of the *Guide*. Depending upon the kinds of user groups, the volume of their information needs, and the resources available to support the information dissemination effort, each information dissemination unit must determine how broad or extensive their objectives and sub-objectives will be. The following outline suggests the extensiveness of objectives.

1. To acquire appropriate documents, maintain a document bank and establish access to other relevant materials through cooperative efforts with other agencies.

    a. To develop and maintain an understanding of the mission of vocational-technical education nationally and in that particular state.

    b. To establish and maintain a linkage with an appropriate national information system.

    c. To acquire or maintain access to appropriate data and/or document banks.

    d. To establish and maintain a surveillance network which will assist in identification and input of significant materials into the national and state information systems.

e. To establish and maintain a storage capacity for information not available through national systems which involves acquiring, selecting, abstracting, and indexing these materials (compatible with the national system).

2. To disseminate relevant materials that serve the needs of identified high priority user groups and individuals.

   a. To identify and classify user groups and determine priority ranking as recipients of dissemination activities.

   b. To determine significant problems of major user groups and resulting information needs.

   c. To develop and maintain a search capacity for retrieval of information.

   d. To serve users and user groups by:

      1. Providing abstracts and bibliographies which assist the user with his identified problems and information needs.

      2. Making significant resource materials (microfiche or hard copy) available to users within the state (or region) whenever needed.

      3. Providing an active list of recognized consultants whom users can contact for assistance.

      4. Providing information about new programs in the state and other exemplary programs.

3. To assist in the diffusion of educational concepts.

   a. To provide educational seminars or courses on the use of the information dissemination system.

   b. To develop and maintain linkages with user groups, particularly the high priority user groups.

   c. To disseminate alternative concepts concerned with the problems, issues, or missions of identified user groups as a result of the linkages established with these groups.

   d. To interpret and summarize results of research for practitioners and decision-makers in high priority user groups.

e. To develop capacity to serve individual users on an interpersonal basis.

f. To issue publications which fill a void and are designed to meet a need identified by a high priority user group. Examples are newsletters, abstract publications, information analysis products.

4. To develop a feedback system and an evaluation program.

a. To establish a feedback system which obtains data on user satisfaction and system effectiveness.

b. To develop an evaluation program which utilizes outside reviewers.

PROGRAM OF AN INFORMATION DISSEMINATION SYSTEM

The components of an information dissemination program are listed below in priority order of importance with the exception of evaluation which should be continuous for all components.

1. User group services.

a. Searching activities for users.

b. Provision of access to materials, equipment and facilities and/or provision of microfiche and/or hard copy.

c. Education activities for users.

d. Field visitation to user groups.

e. Referral services.

f. Current awareness activities.

2. Surveillance system for educational programs and information materials existent within the state.

3. Acquisition of materials.

4. Processing materials.

5. Producing information products.

6. Evaluation.

PRIMARY OUTCOMES OF THE PROGRAM

1. Efficient system.
2. Effective interface with users and user groups.
3. Useful materials in the system.
4. Adequate equipment, facilities, and location.
5. Education of users in the system.
6. Use of materials meaningful to user problems and needs.
7. Current awareness of information on specific interests of target user groups.

FUNCTIONS OF THE INFORMATION DISSEMINATION SYSTEM

The focus of the vocational-technical education information dissemination system is upon high priority user groups with problems, and a storage bank of alternative concepts which assist in the solution of the problems. The establishment of a meaningful interface between these two elements is the most important function. This means there must be an organized unit with responsibility and resources for this activity. Such a unit must develop service capabilities in order to maintain a meaningful interface with user groups. Other functions of the information dissemination system may be added as need is identified and as resources are made available. The following are typical functions of an information dissemination unit. Initial resources should be placed upon the highest priority functions as shown in Figure III-1. It should be noted that the highest priority functions require the least amount of funds.

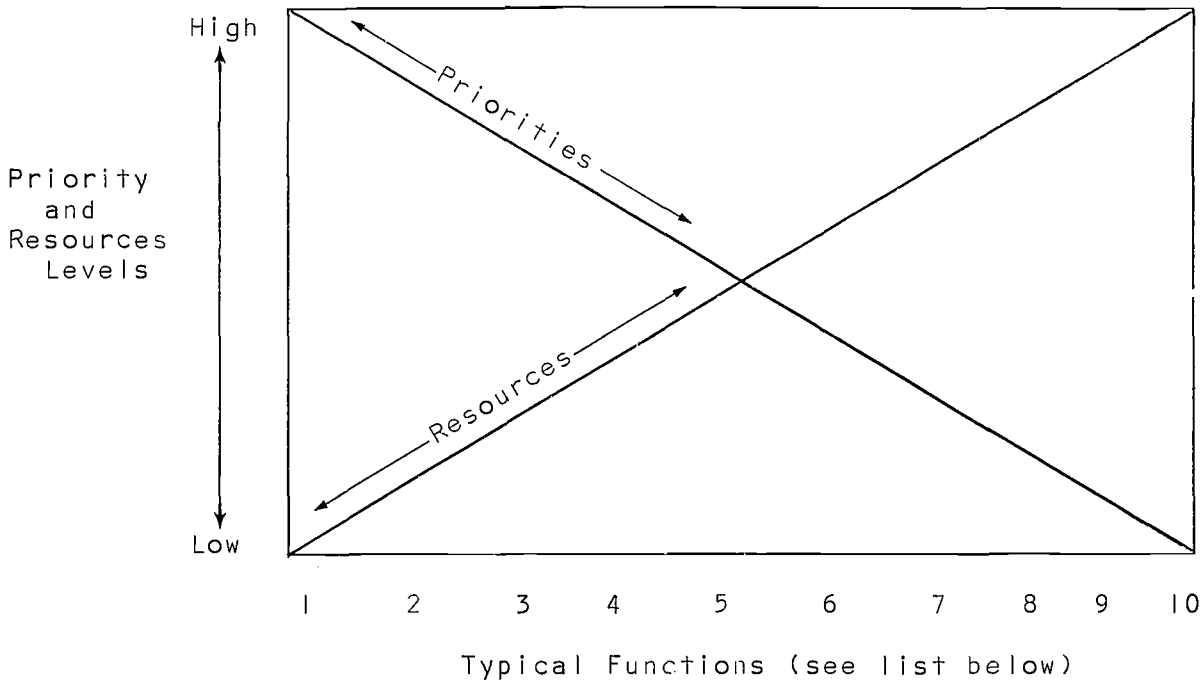


FIGURE III-1. Choice of Functions Based Upon Priorities and Resources Required

1. Identification of high priority user groups, their problems and resulting information needs.

2. Interface between high priority user groups and the individual users from these groups, and the system.

   a. First level of interface.

      (1) Responds to simple information questions and simple substantive questions through the use of published indexes and abstract products.

      (2) Refers other questions to another information center which has capability for response, or obtains information from this information center for the user.

      (3) Provides limited education in use of system.

      (4) Refers users to appropriate availability sources for products and use of equipment.

      (5) Maintains an active list of recognized consultants whom users can contact for assistance with problems.

(6) Maintains an active list of new programs in the state and exemplary programs elsewhere.

b. Higher level of interface.

(1) Responds to high priority user group needs for identification of alternative concepts which have bearing upon problems for which the user has need.

(2) Lends, distributes at cost, or gives copies of abstracts, microfiche, or hard copy of materials to users.

(3) Lends equipment to use materials, e.g., microfiche reader.

(4) Provides continuing education in use of the system.

(5) Provides names of consultants or speakers to user groups.

(6) Provides information about new programs in the state and exemplary programs elsewhere.

3. Establishes a feedback system with users.

4. Establishes a mechanism for two-way feedback system with appropriate personnel in information centers used for referrals.

5. Provides space for use of indexes, abstract publications, microfiche and microfiche readers.

6. Acquires and records intrastate materials that are not included in the national system but are needed within the state.

7. Assists in acquiring materials for the ERIC system.

8. Selects, abstracts and indexes materials useful only to the users served by that information center--materials that do not come within the scope of existing national systems.

9. Provides published alerting or current awareness mechanisms such as newsletters, abstracts.

10. Develops specialized information analysis products that do not duplicate existing products, or products that build on or extend national products.

EVENTS IN ESTABLISHING A SYSTEM

Although many states have initiated information dissemination activities, it may be helpful to others to have a sequence of events in the form of a PERT (Program Evaluation and Review Technique) chart. A chart is included as Figure III-2 which identifies the essential events with the symbol ◯ and identifies added events which could be initiated if they are needed and funds can be secured with the symbol ⊘. These amounts of time serve as a base to be lengthened or shortened in planning specific systems or subsystems. It is judged that the entire development could be effected in about three years.

SCHEDULE OF EVENTS (PERT)

	Events	Time Required
1.	A decision made concerning: 1) establishment of a dissemination system for vocational-technical education materials; 2) groups to be served with some identification of priority; 3) broad objectives of this system; and 4) administrative location, relationship, etc.	
2.	Allocation of funds for investigation of alternative programs and budgets for the dissemination system.	1-12 months
3.	Initiation of investigation of alternative programs and budgets.	1-3 months
4.	A decision made to accept a specific program and budget.	3-6 months
5.	Allocation of funds for this program.	1-12 months
6.	Identification of an administrator or director of program.	1-12 months
7.	Minimum of two professional staff and support staff begin planning duties.	1-3 months

Events	Time Required
8. Remaining professional staff begin planning duties.	1-6 months
9. Conference of all professional dissemination staff and the professional leaders of groups to be served.	1-3 months
a. Identify substantive fields to be covered.	
b. Identify user groups; determine priority criteria rank in priority order.	
c. Identify problems of each user group and list consultants with expertise in problem areas.	
d. Identify kinds of materials (books, documents, tapes, fiche, etc.) in addition to ERIC that are needed in a system.	
e. Identify tentative criteria for selection and treatment of materials.	
f. Initiate listing of other state and national systems and networks for referral activities.	
g. Identify services needed for user groups in priority order.	
h. Identify locations and/or contact points of information system activities and services.	
i. Identify potential products to be generated by unit.	
j. Review objectives and initiate list of indicators for evaluation.	
k. Identify methods of identification of exemplary programs and current project within state.	
10. Conference with leaders of first priority group using 9 (c-k) as basis for program.	1-2 months
11. Conference with leaders of second priority group using 9 (c-k) as basis for program.	1 month

	Events	Time Required
12.	Conference with leaders of third priority group using 9 (c-k) as basis for program.	1 month
13.	Revised program, budget and PERT chart reviewed, accepted or altered by authorities.	1 month
14.	Begin acquisition program.	1 week
15.	Begin meetings on decentralized locations, facilities and equipment.	1 month
16.	Begin processing of materials.	1 week to 3 months
17.	Begin abstracting, indexing.	1 week
18.	Begin editing.	1 week
19.	Begin abstract publication mailings.	2 1/2 months
20.	Begin retrieval and referral activities.	1-3 months
21.	Publicity released.	1-3 months
22.	Begin educational activities.	1-3 months
23.	Begin dissemination of alternatives for the solution of problems to specified user groups.	1-3 months
24.	Initial decentralized locations, facilities and equipment operational.	6-18 months
25.	Begin information analysis product mailing.	2-3 months
26.	Begin evaluation activities.	12 months
27.	Design user group study.	12 months
28.	Begin review of objectives, program and budget.	12 months
29.	User study completed.	6 months
30.	Review of objectives, program and budget completed.	6 months
31.	Evaluation made by outside panel.	6 months
32.	Recycle	3 months

Scale: 3/32" = 1 month

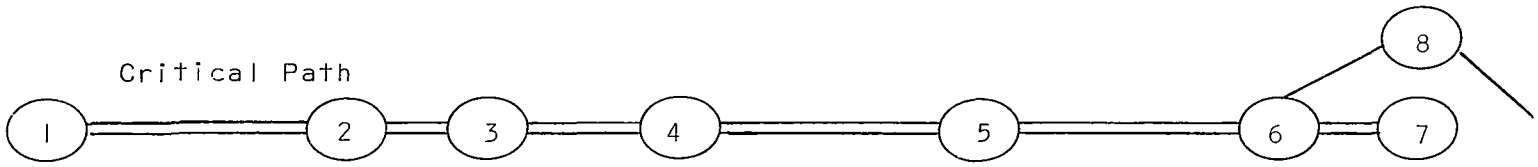


FIGURE III-2. Pert Chart

Vocational-Technical Education Information Dissemination System

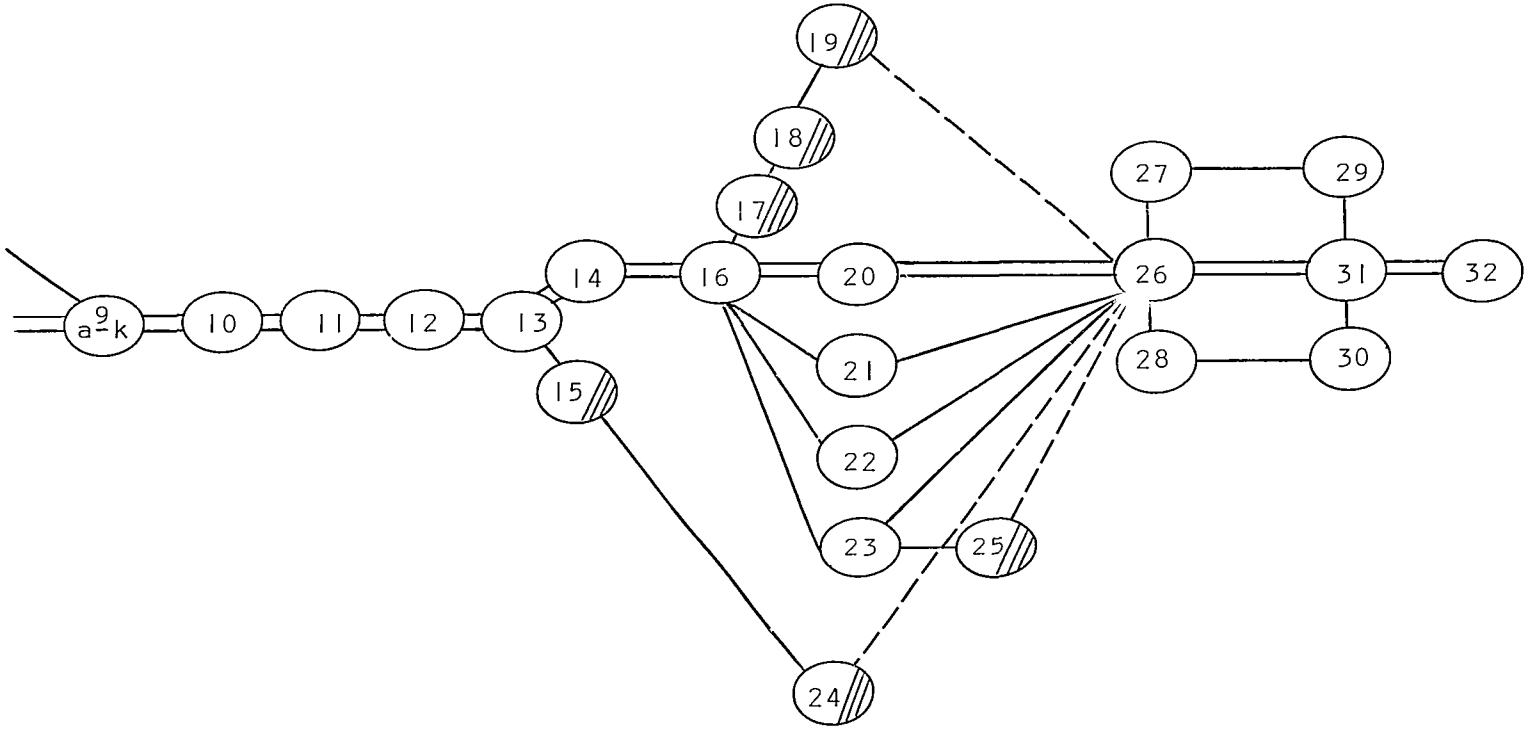


FIGURE III-2 (Continued)

STAFFING OF THE ORGANIZATION

Staffing patterns for information systems have been extremely diverse and often not effective. With the emphasis on dissemination and utilization, staffing should reflect this new direction. The professional functions and the training and experience to perform them follows.

DIRECTOR OR HEAD OF UNIT

Tasks of Director or Head of Unit

1. Planning, administering and providing leadership to programs, budgets and evaluation of the dissemination system.

2. Hiring and providing leadership to the staff.

3. Establishing and maintaining appropriate public relations with persons and agencies outside the unit. Includes giving talks and issuing appropriate publicity.

4. Collecting data and preparing reports.

Qualifications of Director or Head of Unit

1. M.A. or Ph.D. in appropriate substantive area, preferably vocational-technical education or one of its sub-fields.

2. Experience in information systems and administration.

3. Primary interest in bringing together the user of information with problems to be solved and the alternative concepts in the information system which have bearing upon these problems.

INFORMATION SPECIALISTS

The tasks that must be performed to carry out the functions of the unit cannot be effectively performed by one specialist. More comprehensive units will utilize several specialists with precise differentiation of tasks, while smaller units will expect fewer specialists to each perform more than one set of tasks. Suggested tasks are grouped under specialist's titles in the following sections.

FIELD SPECIALIST

Tasks

1. Assists director of the information/dissemination unit with identification of high priority user groups and their leaders on a continuing basis.

2. Maintains a liaison with these groups through a planned visitation schedule.

3. Maintains identification of user group problems and information needs.

4. Provides liaison between user and search and Referral Specialist in locating alternative concepts in the information dissemination system.

5. Organizes information, which is in the form of abstracts, reviews, interpretative papers, chapters of reports, journal articles, microfiche or hard copy of reports, or books, in a manner which points up the relationship of the information to the problem of the user, and facilitates its use.

6. Maintains lists of consultants, exemplary programs, and current projects within state.

Qualifications

1. M.A. in education.

2. Experience in teaching and some aspect of information systems.

3. Primary interest in bringing together the user of information who has problems to be solved and the alternative concepts in the information system which have bearing upon these problems.

EDUCATION SPECIALIST

Tasks

1. Utilizes existing training materials and develops additional materials when needed for a continuing user education program.

2. Plans and implements a user education program for preidentified user groups.

3. Refers questions of users to appropriate specialist in the dissemination unit.

Qualifications

1. M.A. in education.

2. Experience in teaching and in the development of curriculum.

3. Primary interest in developing and using appropriate media to teach different user groups how to utilize the information system effectively.

SEARCH AND REFERRAL SPECIALIST

Tasks

1. Primary responsibility is developing search strategies for searching ERIC indexes and/or computer tapes.

2. Performs searches for Field Specialist, Information Analysis Specialist and users of the system.

3. Responds to simple information questions.

4. Maintains referral system.

5. Maintains current awareness program.

Qualifications

1. M.A. in library science, or information science.

2. Experience in libraries or information systems.

3. If responsible for computer tape files and searches of these files, must have appropriate computer science course work and experience.

4. Primary interest in bringing together the user of information with problems to be solved and the alternative concepts in the information system which have bearing upon these problems.

INFORMATION ANALYSIS SPECIALIST

Tasks

1. Is responsible for reviewing, analyzing, and/or synthesizing ERIC and other appropriate materials to meet

information needs resulting from pre-identified problems of targeted user groups within the field of vocational-technical education and its related areas in that state. These are needs which are not met with existing products.

2. Works with the specialist whose primary function is development of search strategies to locate appropriate materials in ERIC and other systems. Most writing activities result from the findings of field specialist, education specialists, and search and referral specialists.

Qualifications

1. M.A. or Ph.D. in vocational-technical education or one of its sub-fields.

2. Teaching and writing experience.

3. Primary interest in analytical and interpretive writing.

ACQUISITION AND PROCESSING SPECIALIST

Tasks

1. Primary responsibility is for the bibliographic processing of the state materials that are not included in national systems into a manual, or computer storage and retrieval system.

2. Is responsible for acquiring materials generated within the state that are needed for use within the state but are not processed into an information system.

3. Maintains surveillance of materials and programs in the state for possible inclusion in the system.

Qualifications

1. M.A. in library science.

2. Experience in information systems or libraries.

3. Primary interest in acquisition and cataloging of materials utilizing the procedures and thesaurus of the ERIC system.

DOCUMENT ANALYSIS SPECIALIST

Tasks

1. Selects, abstracts and indexes research reports and other resource materials in the field of vocational education which pertain to that state and are not scheduled for another information system.

2. Assists in identification of materials for input into the system and in interpretive writing.

Qualifications

1. M.A. in vocational education or one of its sub-fields.

2. Experience in teaching or an information system, and in writing.

3. Primary interest in abstracting, indexing and interpretive writing.

EDITING SPECIALIST

Tasks

1. Primary responsibility is editing the descriptive and informative abstracts and index terms.

2. Follows guidelines and standards established by the ERIC information system.

3. Trains abstractors in the techniques of writing abstracts and selecting index terms.

4. Edits style and format (not content) of other publications of the unit.

Qualifications

1. B.A. or M.A. in English or education.

2. Experience in writing and editing.

3. Experience in teaching others to write.

4. Primary interest in editing publications, abstracts, index terms; and in training abstractors.

PUBLICATION SPECIALIST

Tasks

1. Is responsible for supervision of the preparation of copy for printing or duplication.

2. Meets printing deadlines and works with printer in printing problems.

Qualifications

1. B.A. in English or journalism.

2. Experience in printing, publication, and graphic arts.

3. Primary interest in production of publications, brochures, and newsletters.

COMPUTER SPECIALIST

Tasks

1. Establishes and maintains data processing procedures.

2. Converts search requests to computer language.

3. Provides consultation to the Search and Referral Specialist on the nature of the computer file.

4. Assists with design of computer search strategy.

5. Analyzes and evaluates computer output.

Qualifications

1. Bachelor's degree. A major or minor in computer science.

2. Experience with equipment he will be using.

3. Primary interest in users' problems and in obtaining citations from the computer that relate to these problems.

CHAPTER IV

IMPLEMENTATION OF THE PLAN

OBJECTIVES

A state information dissemination system for vocational-technical education comes into being as the result of authorization by the State Department of Education with funding from state and federal sources. It is part of an overall State Plan which has a number of objectives, one of them concerned with dissemination of research findings and other related information.

MISSION COMPATIBILITY

The information dissemination system staff should strive to achieve clear understanding of the mission of the state vocational-technical education programs within the context of the total educational program. Means of achieving this understanding include meeting with program officials, and studying board meeting minutes, the State Plan, state and federal vocational education laws, projections of state activities, descriptive reports, and other materials. In determining the objectives of a state information dissemination system, the objectives of the national information system to which it relates should be studied and taken into consideration. The objectives of VT-ERIC and Central ERIC are included in Appendix 1. Differences need to be identified since these may affect the program to be evolved. The primary conditioners of state dissemination objectives are:

1. Statutory and regulatory provisions in the state,
2. Organizational and structural variables between and within institutions,
3. The resources of the state,
4. Requirements of the state, and
5. User requirements.

AD HOC ADVISORY GROUPS

During this planning period, leaders at various levels in the educational structure need to be identified to serve on an *ad hoc* advisory group to assist in identifying and categorizing users of information, identifying their problems, and assisting in the planning of services and products. Emphasis should be on establishing an interpersonal relationship between users and the system. Existing reports about vocational-technical educators' information gathering habits should be studied and the results discussed with the *ad hoc* advisory group. One such study by McCracken has findings which are useful in developing an information dissemination system.[1] These findings are included as Appendix 2. A program for an *ad hoc* advisory committee should include items that need testing with them. A suggested list of items follows:

1. Substantive fields to be covered,
2. Identification of users by role and function, then group,
3. Determination of criteria for ranking groups in priority order of importance,
4. Ranking of groups,
5. Problems of each user group and list of consultants with expertise in problem areas,
6. Kinds of materials (books, documents, tapes, fiche, etc.) in addition to ERIC that are needed in a system,
7. Tentative criteria for selection and treatment of materials,
8. Listing of other state and national systems and networks for referral activities,
9. List of services needed for user groups in priority order,
10. Locations and/or contact points of information system activities and services,
11. Potential products to be generated by unit,

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[1]J. D. McCracken, "The Utilization of Information by State Supervisory and Teacher Education Personnel in Vocational and Technical Education" (unpublished Ph.D. dissertation, The Ohio State University, 1970), (ED 039 369).

12. Review of objectives and initiate list of indicators for evaluation, and

13. Methods for identification of exemplary programs and current projects within state.

It should be remembered that the role of the advisory body is to make suggestions and recommendations to the dissemination system staff. It is the responsibility of the staff and the director in particular to interpret these recommendations. Following this initial effort, it is advisable to meet with *ad hoc* groups of opinion leaders from the high priority user groups, once identified, to review and refine the findings as related to their specific groups.

The results of all the meetings should be studied by the information dissemination system staff and a report drawn up which reviews the objectives, the programs, the budget and expected outcomes. An appropriate time should be determined for its presentation to the state director of vocational-technical education and/or other administrators having overall responsibility for the information dissemination system. Implementation of the plan will probably be in phases.

RELATING PROCEDURES TO OBJECTIVES

The information dissemination system staff should select and develop specific operating procedures for achieving objectives. It is recognized that the detailed planning for the operational sequence must evolve during the establishment period; however, there must be an initial outline of general procedures that support objectives. Alternative operating procedures should be identified and assessed in terms of their cost and benefit. Final selection may then be based upon potential effectiveness and efficiency in achieving the stated objectives of the information dissemination system. This is true for selection of staff, facilities, and equipment, as well as utilization of these and other resources. Maintenance activities which do not contribute to objectives are to be avoided or should be cause for reassessment of objectives.

To be maximally effective, the state and national information system (ERIC), as well as other appropriate systems, should share a compatible, coordinated relationship which is reflected in objectives and procedures. The state information dissemination system staff should endeavor to understand the procedures of the national system and its objectives by using it, studying relevant literature, and attending appropriate conferences sponsored by Central ERIC and VT-ERIC. VT-ERIC shares with the State Research Coordination Units a commitment to the improvement of vocational-technical education programs. In these ways, the effectiveness

of the state information dissemination system and its relevance to the vocational-technical program mission can be improved. These relationships are portrayed in Figure IV-1.

CYCLICAL PROGRAM PLANNING

Objectives should be regarded as part of a cyclical program planning process, a basis for action, and subject to evaluation and revision. Objectives should be attainable and insure continuing improvements in effectiveness and efficiency of the state dissemination system. Indicators which measure progress towards objectives need to be identified and utilized.

Revision of state objectives should be undertaken when changing conditions, manifested by empirical data, dictate a need for change. The empirical data justifying a change in objectives should be deliberately sought in formal, periodical evaluation. Routine appraisal by staff may also be useful, but extreme caution must be used to keep this in proper perspective. A panel of reviewers representative of affected user groups should be utilized to evaluate progress towards objectives and to make recommendations for revision of objectives. Evidence gained from both formal evaluations and routine appraisals should be analyzed and used by the information dissemination system staff in developing new objectives and goals.

In general, broad objectives remain in effect as long as there is a continuing need to be met. Activities will change as short-term goals are met, however, these changing activities continue to be supportive of the broad objectives. The process of formulating objectives for the system is summarized as follows:

1. Include objectives which enhance the compatibility and supportive nature of the information dissemination system to the mission of vocational-technical education in the state.

    a. Meet with state vocational-technical education officials.

    b. Study documents of the official board and division staff.

    c. Interpret the vocational-technical education program mission to the *ad hoc* advisory body.

2. Involve *ad hoc* advisory bodies in developing long-range objectives and short-term goals for the dissemination system.

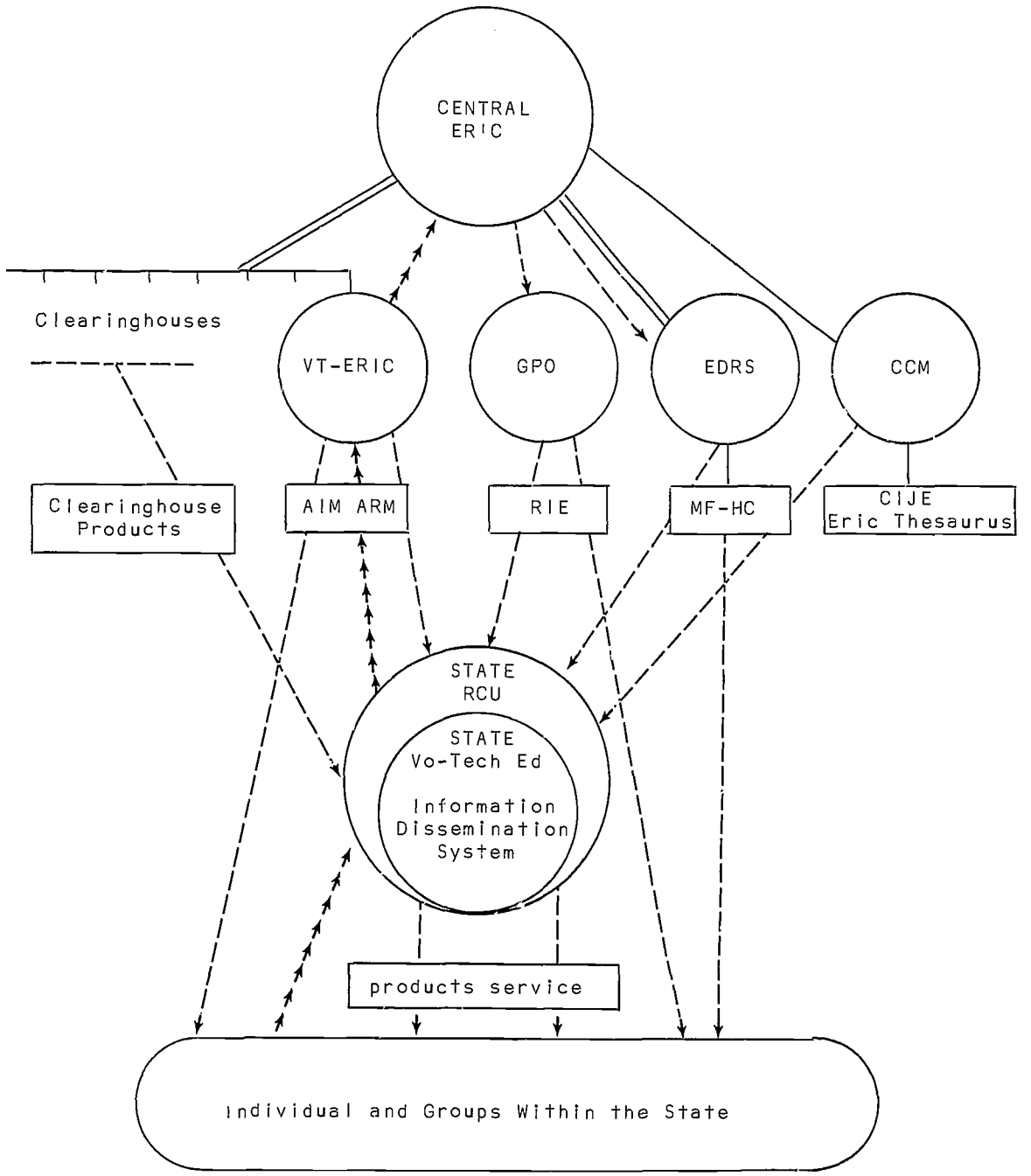

FIGURE IV-I

Diagram of the Relationship Between the State Vocational-Technical Information System and the National System

a. Include representatives of groups to be served and affected.

b. Have small task forces of advisory body and staff members conduct needed studies for the main body if feasible. Utilize existing studies whenever possible.

c. Allow the *ad hoc* advisory groups only to recommend objectives to the staff.

d. Reserve for the staff the responsibility of interpreting and recommending objectives to the state director of vocational education and/or other administrators.

3. Make a primary objective the development of a program which provides a continuing interpersonal relationship between users and system.

   a. Identify, explore, and select current and anticipated problems and needs of individual and group users.

   b. Utilize *ad hoc* committees of opinion leaders in substantive areas to assist in identification and categorization of users and needs.

   c. Assign priorities to individuals and groups, and to problems and needs.

   d. Develop a service program to serve these needs.

4. Establish a relationship with national system (ERIC) and VT-ERIC (the ERIC clearinghouse responsible for the area of vocational-technical education) which reflects compatible procedures and objectives.

   a. Study Central ERIC and VT-ERIC objectives.

   b. Determine areas of mutual concern.

5. Regard objectives as part of a cyclical process of planning of the dissemination system.

   a. Use objectives for deciding upon operating activities.

   b. Specify nature, conditions, and extent of performance expected in statement of short-term goals.

   c. Determine indicators with which to measure progress toward objectives.

6. Evaluate and revise the stated long-term objectives and short-term goals periodically.

   a. Use both formal and informal evaluation techniques.

   b. Revise objectives upon basis of evaluations of process, products, services and outcomes.

   c. Use a panel of reviewers representative of affected groups to evaluate progress towards objectives and make recommendations for revision of objectives.

   d. Base revision of objectives and goals upon empirical evidence which has been gathered routinely or specially for the review, and the recommendations of the review panel.

USERS

Users of an information dissemination system should be identified and categorized early to facilitate further planning. These groupings may be organized by bodies, individual roles, substantive fields, educational or political levels and/or in other functional categories. Grouping is important because of the efficiency which can be gained by serving users in groups. Grouping of users who have common activities and problems also permits the development of products and dissemination techniques which make the information system more efficient and effective. The efficiency gained permits allocation of more resources to the uniquely individual problem of some users.

Leaders representing the substantive fields and levels of vocational-technical education may be selected for membership on an *ad hoc* advisory committee. This committee can give valuable assistance in identifying users by their fields, roles, functions, information problems and needs.

USER GROUP PRIORITIES

The basis for and method of grouping users can vary. The categories which follow are illustrative of the usefulness of grouping. Usually it is not economically feasible to respond equally to all user groups. Under these circumstances, groups which are to receive priority in service must be identified. The information dissemination system must be designed to respond first to the "high priority groups," then to other groups as resources permit. The following categories were devised by members of the *ad hoc* committee of RCU personnel and the VT-ERIC staff. Randomly-ordered lists of organized bodies, individual users, and political

levels were ranked for priority by members of the national advisory committee and staff of The Center for Vocational and Technical Education. The numbered lists are presented in the order in which they were compositely ranked by the two groups. This is an example of assigning priority by consensus of representative groups. The rankings were not intended as conclusive because determination of priorities must be effected in each state.

Organized Bodies

1. Vocational education agencies
2. Colleges and universities
3. Research and development organizations
4. Educational agencies
5. Libraries and information service agencies
6. Legislative bodies
7. Educational interest groups
8. Non-education agencies
9. News media
10. Private enterprise

Individual Users

1. Teacher educators
2. Researchers
3. Educational administrators and supervisors
4. Teachers
5. Counselors
6. Graduate students
7. Government agency personnel
8. Librarians
9. Legislators
10. Editors
11. High school and college students
12. Businessmen
13. Reporters

Substantive Fields (not ranked)

Agricultural education
Business and office education
Distributive education
Technical education
Trade and industrial education
Vocational education

Health occupations education

Home economics education

Industrial arts education

Nonvocational education

Combinations of fields

Non-educational fields

Levels

Educational (not ranked)	Political
Graduate education	1. State
Baccalaureate	2. Federal
Post-secondary	3. Local
Secondary	
Elementary	

Anotner method of arriving at priorities (i.e., other than representative consensus) is to define priority classifications as a rationale for assigning priority to groups. Priority classification is illustrated with examples of groups which might be assigned to each classification.

User Group Priority Classification I. - People who are directly involved with developing and introducing innovations into programs; administering vocational-technical education programs; preparing vocational education teachers; and teaching in vocational education programs.

Researchers

Teachers

Local directors of vocational education

State division of vocational education personnel

Principals

Superintendents

Teacher educators

Boards of education Trustees, directors, regents, etc.

User Group Priority Classification II. - Those people serving education programs in an advisory and information capacity and those who work indirectly with students in vocational and technical education.

Advisory committees

Librarians

Professional organizations	State and local administrators (other than those directly involved in vocational and technical education programs)
News reporters	
Guidance Counselors and other student personnel workers	

User Group Priority Classification III. - Individuals not involved in vocational and technical education programs, but who have interest in programs for various reasons.

Students (high school or college)	Government officials
	Foundations
Parents' organizations	
	Private citizens

The groupings shown in preceding sections are gross groupings which would need further refinement (e.g., specific kinds of educational agencies, specific educational agencies). Keener differentiation of groupings and their needs will, over time, improve the effectiveness of the services and products of the system. If national or local studies about the particular user population to be served have been made, this background information will be helpful in planning and working with these groups.

NEW GROUPINGS

The information dissemination system staff should be alert to natural regrouping. This may imply inappropriateness of the group, dissatisfaction with service, or failure to understand the system. Recognition of perceptible changes in use patterns requires a record system which logs requests and service. These records should be summarized and analyzed frequently to provide a basis for identifying and serving new groupings, creating new products, establishing new priorities, and developing consumer education techniques.

Serving individual and group users is the essence of operating and maintaining the system. In planning stages, emphasis is put upon identification and categorization of users so that their problems and needs might be delineated and categorized. Periodical review of individual and group users should be undertaken. It is important to ask:

1. Are new groups forming which have problems and needs?

2. Are previously-established priorities still appropriate, or are new and more crucial priorities developing?

3. Are new materials and techniques available which will serve new user groups, before served only as individuals?

4. Is the volume of available materials and the parallel demand for materials indicative of need for new products?

STUDY OF USERS

Categorization of users into groups is important in initiating an information dissemination system, but as the system evolves it is equally important to study the commonalities and differences within and between groups. Some of the questions to be investigated are:

1. What are the information gathering habits of a user? (e.g., Does he obtain information from his colleagues or printed materials?)

2. What are the user's problems or topical areas of interest for which he needs information?

3. How does the user use information?

4. What are the user's needs from an information system?

   a. How should the mechanics of the system assist his needs in regard to:

      1) Ease of access of the system?

      2) Availability of materials?

      3) Turnaround time from request to receipt of materials?

   b. How can the substantive resources in the system be located?

      1) How compatible is the terminology in the system with his terminology?

      2) What provision does the system have for interpretation of his needs and relating them to the concepts that are embedded in the materials in the system?

One such study is being conducted by The Center for Vocational and Technical Education in cooperation with Research Coordination Units in seven states. It will provide valuable information on vocational-technical education information dissemination system

target audience characteristics and information habits. Another Center study, currently being conducted, addresses the problems and information needs of specific target audiences.

A summarization of activities concerned with users follows:

1. Identify and categorize users.

   a. Identify potential users at various levels in the state through analysis of mission of vocational-technical education.

   b. Categorize users into functional groups for efficient and effective servicing.

2. Assign priorities to users.

   a. Obtain assistance from the *ad hoc* advisory body in establishing priorities.

   b. Base levels of service upon priorities.

   c. Base product development upon priorities.

3. Serve individuals and groups with specific products and techniques.

   a. Classify potential users by organization, functional substantive field, level, or other categories.

   b. Assign priorities to groups.

   c. Identify and utilize opinion leaders within groups.

4. Determine need for possible restructuring of user group priorities, products, or services.

   a. Keep records of operations and analyze these records.

   b. Study changes in use patterns for implications.

5. Educate users in utilization of the services and products of the system.

   a. Implement an educational program.

   b. Use training aids.

c. Use personal contacts, group meetings, and printed materials.

d. Provide individual assistance.

6. Design system to permit easy access for clientele.

a. Study request, complaint, and use levels.

b. Improve means of access to the collections.

7. Review user groups periodically.

a. Identify new groups.

b. Recombine old groups.

8. Study users within categorized groups and study the commonalities and differences between groups.

PROBLEMS AND RESULTING INFORMATION NEEDS

Information dissemination system users have information needs which arise from their problems. The success of the information system will be in terms of its capability to satisfy user needs. Thus, information dissemination system planning should incorporate the capacity to:

1. Anticipate problems of users.

2. Provide information to assist users in solving problems, (e.g., to provide alternative concepts, and to assist users in becoming more effective in their roles).

3. Adjust to changing user problems and activities.

High quality services and products which meet the needs of clients is the ultimate goal of an information dissemination system. Advance identification of all problems and resulting information needs by an information dissemination system staff is improbable, but can be improved by involvement of users in the task. As recommended in previous sections, special *ad hoc* committees from high priority user groups may be formed to assist in identifying problems and resulting information needs which may be research or operational in nature.

IDENTIFICATION OF USER PROBLEMS

Three methods of identifying user problems are: 1) to have sessions with *ad hoc* committees of leaders within particular groups (e.g., teacher educator group, research director group, counselor group); 2) to analyze letters received from individuals about problems; and 3) to systematically survey users.

Examples of specific problems, taken from actual correspondence, and their classification are:

Example No. 1

Research Director's Problem: We are in the process of designing and developing a concrete technology curriculum which will be instituted in a junior college and one task is to develop an evaluation design for this concrete curriculum.

Research Director's Needs: What information is available relative to evaluation that would be relevant?

Classification: Evaluation and measurement; curriculum; technical education.

Example No. 2

Local Supervisor's Problem: We have child development laboratories as part of the homemaking programs in our high schools and are interested in an evaluation device to be administered as the senior high school pupil first enters the program and again at the end of her experience.

Local Supervisor's Need: Is there an instrument and/or instruments available that could be adapted for our purpose?

Classification: Evaluation and measurement; students; home economics education.

CLASSIFICATION OF USER PROBLEMS

Once identified, user problems may be classified. Classification of problems into subject categories and fields will assist in: 1) identifying products which will assist a user, 2) determining whether new products are needed, and 3) determining whether existing products need to be repackaged. A suggested list of categories and fields follows:

Categories	Fields
Administration and Supervision	Agricultural Education
Curriculum	Business and Office Education
Employment and Occupations	Distributive Education
Evaluation and Measurements	Health Occupations Education
Facilities and Equipment	Home Economics Education
Historical Studies	Industrial Arts Education
Individuals with Special Needs	Manpower Economics
Instructional Materials and Devices	Occupational Psychology
Philosophy and Objectives	Occupational Sociology
Research Design, Development and Utilization	Trade and Industrial Education
Students, Occupational, Guidance, and Other Student Personnel	Vocational and Technical Education (General)
Teachers and Teacher Education	Technical Education (i.e., in any field)
Teaching and Learning	
Other Resources	

A problem, once solved, loses much of its priority for attention. The initial identification of the problems and resulting information needs, therefore, must be continued by working with groups of users to assign priorities to crucial emerging problems. As new problems emerge and older problems subside, products need updating. Indexes may also require adjustment to reflect new and emerging categories of users and problems.

Refinement in the system will be the result of a continuous comparison of problem areas and actual requests. Trends may be discussed with representatives of user groups for further clarification and priority assignment. Other identification may result from contact and coordination with the national system (ERIC and VT-ERIC).

The following summary serves as a checklist of activities concerning user problems.

1. Identify and categorize user problems and resulting dissemination needs.

    a. Employ special committees of users to identify problems and needs.

    b. Strive for compatibility of problem categorization with ERIC and VT-ERIC.

2. Identify emerging new problems continuously.

a. Compare problem areas with actual requests.

b. Discuss trends in problems with *ad hoc* committees.

c. Share problem identification with ERIC and VT-ERIC.

3. Establish priorities to categories of problems for use in identifying products to serve information needs.

4. Use varied products and services to meet the diverse information needs of users.

SERVICES

The diversity in types of organizations, activities, and personnel in vocational-technical education dictates that services must be varied if they are to be effective. Examples of this diversity may be seen in the implicit needs of individuals with such a wide range of roles as that of researcher, teacher, and administrator. This diversity necessitates continuous study of the nature of changing user problems and resulting information needs.

Factors to be considered in establishing user services include:

1. Level of user (i.e., local or state; secondary school or university).

2. Activities or functions of the user.

3. Purpose for which information will be used.

4. Primary document collection.

Additionally, the following also need consideration:

1. Timing--the urgency of the user need must be considered.

2. Access--ease of access to services and system.

3. Comprehensiveness--specific resources used for searching, (e.g., only the ERIC system; within ERIC, only RIE, CIJE, PACE, MANPOWER, AIM, ARM).

4. Currency--years of coverage to be included.

5. Format--selection to be based on user needs. Examples are abstracts, syntheses, summaries, bibliographies.

6. Media--most effective ways to convey the information, (e.g., printed material, microfiche, video-tape, and audio-tape).

Planners of information dissemination services should also consider: 1) state size (e.g., population and land area); 2) available resources (e.g., funds and personnel for the information dissemination system); and 3) other available services (e.g., services of libraries, other information centers, and computer centers).

The relationship of information dissemination to information services needs some clarification. Dissemination means "to spread widely" and methods to accomplish dissemination are diverse. The means of disseminating research findings have been typically through conferences about the findings, mailing research reports to potential users, or journal articles about school systems where an innovation resulting from research has been installed. The past decade has seen a tremendous increase in research activity and a subsequent increase in the mass of information. First the capability to cope with this great mass of information being produced must be developed. The information dissemination system should then focus upon bringing the user of information together with the alternatives which he needs to perform his role more effectively. To accomplish this requires diverse services within the information dissemination system. Dissemination of educational concepts is accomplished through these services.

In order to provide the variety of services needed, it is necessary to utilize all potential resources. Some of the broad possibilities for serving individuals and groups are covered in the following list. The list was developed and ranked for priority in the same manner as were the lists of user groups earlier in this chapter.

Reviewing and/or synthesizing of research, programs, and methodologies
Searching for materials through manual, mechanical, computer or combinations of techniques
Preparing bibliographies in topical areas
Acquiring information materials from sources
Providing information materials
Giving consultant service
Interpreting and analyzing information
Referring users to other sources
Training users in the use of the system
Preparing reports of research
Repackaging information material for local use
Providing access to equipment and facilities

Some of the services listed are so fundamental to the operation of the system that failure to perform them would result in failure to function (e.g., acquiring publications of abstracts and their indexes in the field of education). Other services would greatly enrich the program (e.g., reviewing and synthesizing).

For purposes of this *Guide*, services are divided into those activities which interface directly with the user (called user services) and his information needs, and those activities which make user services possible. These supporting activities are essential in varying degree to the information dissemination system. The list of services identified in the previous paragraph is divided under these two groupings as follows.

User Services

- Searching for materials through manual, mechanical, computer or combinations of techniques
- Providing information materials
- Giving consultant service
- Referring users to other sources
- Training users in the use of the system
- Providing access to equipment and facilities

Supporting Services

- Reviewing and/or synthesizing of research, programs, and methodologies
- Preparing bibliographies in topical areas
- Acquiring information materials from sources
- Interpreting and analyzing information
- Preparing reports of research
- Repackaging information material for local use

User services will be described in this section and supporting services will be discussed in succeeding sections.

SEARCHING SERVICES

In general, searching for information is thought of as searching through files, indexes or tapes to locate published items which contain the concepts being sought. This is known as retrospective searching. Unless the user specifies the period of years or specific files in which he is interested, the search will be of an entire collection over its complete span. This search is performed at the time that an information need occurs.

Another type of searching service is a current awareness service called Selective Dissemination of Information (SDI). The primary objective of SDI is to keep a user aware of current

information and/or activities in his field of interest. It is a service where a "profile" of general and/or specific interests of an individual user or group of users is established. New information matching the user's profile is provided to the user on a routine basis. In some instances, an abstract of the item or a full copy of the item may be sent to the user. This service may include information about new research reports or news about new activities being initiated. Since this information may reach the user at a time when he has no specific need for it, he must establish a personal file in which he can locate these concepts for future use, or rely upon the information system to locate these concepts again. Establishment of personal file is covered in a book by Jahoda.[2]

Users of SDI have changing problems and interests. In addition, they change positions and/or locations on occasion. This requires updating of their profiles. The agency performing the SDI function often neglects to staff for this function, or the user neglects to respond to updating requests from the information dissemination system. Updating of user interest profiles requires considerable effort if SDI is to be effective.

First priority should be given to developing a capability to locate quickly the concepts within the document base and the materials which contain these concepts, and a liaison with user groups and their members which assures continuing use of the information dissemination system. After this, it may be desirable to investigate the current awareness need of these users.

PROCEDURES

In establishing the procedures for searching, it is essential to:

1. Determine the professional tasks within the searching function.

2. Determine the nonprofessional tasks within the searching function.

3. Determine an efficient sequence of all tasks.

4. Design forms that:

   a. Follow the sequence
   b. Are easily understood by those using them

---

[2]Gerald Jahoda, *Information Storage and Retrieval Systems for Individual Researchers* (New York: Wiley - Interscience, 1970), 135 pp.

c. Gather a minimum of essential information
d. Will gather data which can be "computerized" for "feedback" studies.

A suggested procedure and forms for searching the ERIC system follow. Requests come to a system by letter, memorandum, telephone, and direct personal contact. In whatever manner they occur, it is essential to fill out a User Request Form (Form IV-1) which begins the data gathering process. Whenever possible the form should be filled out by the user. If not by the user, it is filled out by the professional staff member responsible for the search strategy. The form should always be reviewed in discussion between the user and the professional searcher. This can be accomplished in person or by telephone. The budget should accommodate telephone service. This kind of activity is known as query negotiation.

The formulation of the search strategy should be determined by the same professional who talked with the user about his query. A suggested procedure and search form (Form IV-2) for formulating this strategy and for locating the materials follows. In this instance, the procedure outlines a manual search. Many units will only have a manual search capability and all units will require this capability for current materials for which ERIC computer tapes have not been received.

Professional Activity

1. After User Request Form and query negotiation is completed, list key words of problem that are underlined with a 1, then those with a 2, etc. All terms are to be coordinated by "and" logic (i.e., All key words ideally must have been used to index each document to meet the requirements of the user's problem; however, the user is interested in documents with concepts most important to him even if the document doesn't include all concepts desired).

2. Look up terms in ERIC Thesaurus. Check "Not used" column for terms not found. (In a computer search, search title field for these terms.)

3. If a synonym is supplied in the Thesaurus, add to synonym column and cross out term in key word column.

4. Check ERIC Rotated Descriptor Display for modifying words which may be more applicable to the problem, and substitute this term.

5. Write the terms to be searched in the Retrieval Table.

6. If alternative terms (e.g., Change Agents, or Educational Change) are identified as possible search terms, use the term in the Retrieval Table which appears to have the closest relationship to the problem being searched. Use the second term in the Alternative Search Table. The alternative word for keyword-1 must be written in the column, labeled alternative keyword-1. This table satisfies the "or" logic.

7. Review results found by nonprofessional staff.

8. Recycle upon receiving follow-up request from user.

Nonprofessional Activity

1. Read problem to be searched and terms selected for the search.

2. Look up terms in Retrieval Table and Alternative Search Table in the ERIC Indexes. If it is very clear that a title does not relate to the problem, do not record retrieval number; otherwise, record number. (Questionable titles should be checked with professional staff member.)

3. Add inclusive dates of indexes searched.

RIE	_____	CIJE	_____
AIM	_____	Manpower	_____
ARM	_____	PACE	_____

4. Circle same document numbers which are found in more than one column. Abstracts of items circled in the two or more columns of both tables are to be located unless the number exceeds 12, in which case check with professional staff.

5. Locate abstracts in appropriate publications and xerox two copies of each abstract. Circle abstracts.

6. Add a large colored M beside document number of titles for which microfiche can be supplied.

7. Search card catalog for terms in Retrieval Table and the Alternative Search Table and add call number of items to appropriate table.

8. Remove catalog cards for items identified in same number of columns shown above in item 4, alphabetize by author. Xerox cards to form a bibliography list.

Make two copies of list. Mark items which can be borrowed with a colored L beside author.

9. Fill out form letter to user, add attachments specified in letter and the abstracts and lists. Give to professional to review.

Additional suggested forms are:

Form IV-3 Response to Request
Form IV-4 Comments on Search Request and Output
Form IV-5 User Follow-up Request Form.

Screening and analyzing the search output is performed by the professional staff member before it is sent to a user. The professional may need to call the user to discuss the output. This may also enable him to move more rapidly into a second search. Under some circumstances, the form (Form IV-4), Comments on Search Request and Output, may be appropriate. This is called client briefing. An interpersonal relationship is now being established.

A computer search is different from a manual search in that there are more access points for the location of information than a printed index can provide. The ERIC magnetic tapes are accessed through QUERY, a generalized search application capable of retrieving information from these tapes. Through this system words or numbers in the title, descriptors, publications date, and abstract can be searched. Literally, everything in the resume can be searched. The potential extensiveness and variations of searches require careful attention to the formulation of the search strategy.

Conducting a computer search of the collection can be costly, especially if the search strategy is complex or extensive. It is wise to maintain a record of the computer time required to conduct various searches. This record can provide the basis for anticipating the cost of specific searches.

RESEARCH COORDINATION UNIT
INFORMATION DISSEMINATION PROGRAM

User Request Form

Name _____ Date _____

Title _____ Telephone _____

Organization _____

Business Address _____

INFORMATION REQUEST

1. Statement of Problem (Please state problem, or topical area, and underline key words which highlight your information need. Write 1 under the most important term or terms of equal importance. Write 2 under the next important term until all underlined terms are numbered.)[a]

2. Main Use for Information (e.g., curriculum revision, research proposal, legislative committee report, P.T.A. presentation).

3. Date of Publications Wanted (Please check publication years you are interested in.)

Current year	_____
Current 3 years	_____
Current 5 years	_____
All years within the system	_____

4. Type of Publication (Please check the following which you are interested in receiving.)

Journal Articles	____	Research Reports	____
Bibliographies	____	Curriculum & Instructional Materials	____
Review Papers	____	Others	____

5. What is the maximum number of citations you are interested in receiving on this subject? _____

Date Received

File Name (Requestee)

[a]Please use a separate form for each problem or topical area.

FORM IV-1

6. Date needed:[b] _____

7. Additional Comments

TITLE REQUEST (Please give exact title along with any other information known about this item. If possible, attach copy of page which cites this title.)

AUTHOR REQUEST (Please give full name of author. If a specific publication is desired, add title, publisher, and date of publication.)

IMPORTANT INSTRUCTIONS

1. Up to 50 titles, or author and titles that are submitted will be searched. Attach lists to this form.
2. As a result of any search, you will receive abstracts, or a listing of items if abstracts are not available. Items which could be furnished as microfiche or hard copy on loan will be coded.
3. Searches cover *Research in Education, Current Index to Journals in Education, Manpower, PACE Report, Abstracts of Instructional Materials in Vocational and Technical Education, Abstracts of Research and Related Materials in Vocational and Technical Education, RCU State Collection.*
4. It has been found in problem or topical areas that iterative searching, that is, successive searches which are refined each time (in general, 1 to 2 follow-up searches) are often needed to explore alternative avenues which impinge upon the information problem or need. A follow-up form for this purpose will be sent to you.
5. Send this request form to: Information Search Specialist
   Research Coordination Unit

   _____
   Street

   _____
   City State ZIP

Contact Method: ___Mail ___Telephone ___Visit ___In-house

_____ Other _____

[b]Results of search are usually mailed within _____ of receipt of request.

RESEARCH COORDINATION UNIT
INFORMATION DISSEMINATION PROGRAM

Search Procedure

A. Professional Task

1. File Name must be same name used on User Request Form.

2. List key words of problem that are underlined with a 1, then those with a 2, etc. on the request form. All terms are to be coordinated by "and" logic. This means that ideally all key words must have been used to index each document in order to meet the requirements of the user's problem.

File Name (Requestee) _____ Date Received _____

	Key Words	Not used in ERIC Thesaurus	Synonyms	Substitutions from Rotated Descriptor Display
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				

FORM IV-2

3. Look up terms in ERIC Thesaurus. Check "Not used" column for terms not found. (In a computer search, search title field for these terms.)

4. If a synonym is supplied in the Thesaurus, add to synonym column and cross out term in key word column.

5. Check ERIC Rotated Descriptor Display for modifying words which may be more applicable to problem, and substitute this term.

6. Write the terms to be searched in the Retrieval Table.

7. If alternative terms (e.g., Change Agents, or Educational Change) are identified as possible search terms, use the term in the Retrieval Table which appears to have the closest relationship to the problem being searched. Use the second term in the Alternative Search Table. The alternative word for keyword-1 must be written in the column labeled alternative keyword-1. This table satisfies the "or" logic.

8. Date completed: _____

B. Nonprofessional Task

1. Read problem to be searched and terms selected for the search.

2. Look up terms in Retrieval Table and Alternative Search Table in the ERIC Indexes. If it is very clear that a title does not relate to the problem do not record retrieval number; otherwise, record number. (Questionable titles should be checked with professional staff member.)

Retrieval Table

Keyword-1	Keyword-2	Keyword-3	Keyword-4	Keyword-5	Keyword-6
Document Number	Document Number	Document Number	Document Number	Document Number	Document Number

Alternative Search Table

Alternative Keyword-1	Alternative Keyword-2	Alternative Keyword-3	Alternative Keyword-4	Alternative Keyword-5	Alternative Keyword-6

3. Add inclusive dates of indexes searched.

RIE	_____	CIJE	_____
AIM	_____	Manpower	_____
ARM	_____	PACE	_____

4. Circle same numbers which are found in more than one column. Abstracts of items circled in two or more columns of both tables are to be located unless the number exceeds 12, in which case check with professional staff.

5. Locate abstracts in appropriate publications and xerox two copies of each abstract. Circle abstracts.

6. Add a large colored M beside document number of titles for which microfiche can be supplied.

7. Search card catalog for terms in Retrieval Table and the Alternative Search Table and add call number of items to appropriate table.

8. Remove catalog cards for items identified in two or more columns of search unless the number exceeds 12. Alphabetize by author. Xerox cards to form a bibliography list. Make two copies of list. Mark items which can be borrowed with a colored L beside author.

9. Fill out form letter to user, add attachments specified in letter and the abstracts and lists. Give to professional to review.

10. Date completed: _____

11. Items sent: _____
date

RESEARCH COORDINATION UNIT
INFORMATION DISSEMINATION PROGRAM

TO:

FROM:

DATE:

In response to your request, you will find the following checked items enclosed:

_____Abstracts
_____List of citations
_____User Follow-Up Request Form
_____Searcher's Comments
_____Your request translated to our User Request Form

Please fill out User Follow-Up Request Form and return if you are interested in having

1. Microfiche
2. Loan copies of materials
3. Additional search

Items available on loan are coded L. Please note the requirements for obtaining these materials. Items on microfiche that are available from this unit are coded M. Other items will need to be obtained from issuing agency or a library.

FORM IV-3

RESEARCH COORDINATION UNIT
INFORMATION DISSEMINATION PROGRAM

TO:

FROM:

DATE:

SUBJECT: Comments on Search Request and Output for _____
(Name of Requestee)

dated _____.

FORM IV-4

RESEARCH COORDINATION UNIT
INFORMATION DISSEMINATION PROGRAM

User Follow-Up Request Form

Name: _____ Telephone: _____

Title: _____ Date: _____

Business Address: _____

_____

_____

I. Request for items (Please list document numbers, or call numbers, of items desired.)

Microfiche[a]	Items on Loan
(e.g., ED 012 345)	(e.g., OK 001 125)

II. Refinement of Problem or Topic[b] (Please state refinement of problem underlining words of interest to you; also, outline any new conditions.)

III. Request to continue receiving new abstracts or listing on this problem. (If this service is desired, please check one time period.)

____1 week ____1 month ____3 months ____6 months ____1 year

Date Received

File Name (Requestee)

[a]Up to ____ sheets of microfiche sent without charge. Additional sheets are $___. a sheet. Send purchase order, or check.

[b]Date needed _____.

FORM IV-5

PROVIDING INFORMATION MATERIALS

The procedure in the previous section assumes that the system will provide microfiche or hard copy of the full text of materials cited to user. This is an important service since it is of little value to a user to know this item exists but not to know where it can be obtained; or if he knows where it can be obtained, but finds that the time required is too long. Provision of full text on microform also means that there must be a microform reader which is easily available to the user. It is the responsibility of the system to be certain of this availability. Variations in provision of full text materials are:

1. Full Text Provided Complementary or at cost

   a. Duplication of microfiche which has full text that is no more than so many pages, obtained from microfiche reader-printer. Additional copies sent at cost.

   b. Hard copy.

2. Uncopyrighted Materials Not on Microform

   a. Reproduce by Xerox at cost.

   b. Lend materials.

3. Copyrighted Materials

   Lend this material or provide on-site use.

4. Expensive or Irreplaceable Material

   Use at the site where material is located.

CONSULTANT SERVICES

Consultant services refer to meeting the need for assistance in using the information dissemination system, or refer to the need for assistance in a function such as curriculum planning. For assistance with the system, the user should be referred to the professional staff member who has this responsibility. For assistance with substance, the system should maintain a list of qualified consultants who have been suggested by agencies or groups in the appropriate field of work. These are persons with whom these agencies or groups have had experience and are willing to recommend. Each consultant should be contacted to verify that he is willing to have his name on such a list.

The activities of the staff who are directly involved in serving users should be coordinated to produce a team effort. These persons should meet together regularly. The director of the information dissemination unit or a member of the group should be chairman of the meetings. Positions suggested in the *Guide* for this team approach are: the Field Specialist, the Search and Referral Specialist, the Education Specialist and the Computer Specialist. The Information Analysis Specialist could be either an ex officio or regular member of this group.

REFERRAL SERVICES

If referring a user to another service, such as DATRIX for doctoral dissertations, information about the service should be sent. This saves the user another inquiry prior to his request for information from the other system. Supplies of literature can be obtained from University Microfilms, Ann Arbor, Michigan which can be sent to a user. A brochure written in general terms about locating and using dissertations or microfilm of dissertations on university campuses should also be given the user. Never assume that the user knows how to use a system. Be sure that information about the other system is up-to-date. The effectiveness of referrals is enhanced if you are able to establish a personal contact with appropriate personnel in other systems and are able to refer users to these persons. This expands the interpersonal relationship between users and systems.

TRAINING USERS IN USE OF THE SYSTEM

Both informal and formal training of users should be a continuing activity. Users should be encouraged to learn how to use the system effectively on their own. This will save prime time of the staff for the more complex problems of users and the system.

The professional in charge of training should identify levels of access to the state information dissemination system (i.e., especially the ERIC system) in order to show users what kind of time and effort is involved in using these levels. An example of three levels is shown in Appendix 3. These levels are: 1) use of a subject index; 2) use of a rotated descriptor display and a subject index; 3) use of a rotated descriptor display, a thesaurus, and a subject index. A user may utilize all of these levels at one time or another. Training sessions for users with common interests and problems allows use of examples which apply to all in the group. Members of mixed groups find less relevance of examples to real problems. The principal points to be considered in training are:

1. Query formulation,

2. Formulation of the search strategy,

3. Levels of access to the system and the resulting output from these levels,

4. Location of documents or microforms,

5. Location and use of equipment, and

6. Services and procedures of the Information Dissemination System helpful to the user.

Extraneous facts about the information dissemination system and other systems only tend to confuse the user. If the user in a training group is given actual practice in each of the principal points about your own system (i.e., especially points 1-5) he is more likely to retain and use the new knowledge and skill. General orientations to the system, with emphasis upon its vast complexities, have repeatedly failed to promote actual use of the system.

PROVIDING ACCESS TO EQUIPMENT AND FACILITIES

The minimum equipment and facility service is to have a central location in a state with ERIC microfiche and a reader; and a list of all agencies, primarily libraries, which have readers that can be used by the public. This list can be sent to users in or near these locations. Any additional services performed by these agencies would also be helpful information to a user.

Additional locations of facilities, equipment and services under the aegis of the RCU or through cooperative arrangements should be determined and then maintained effectively at a level needed by users.

A summary of the services section follows.

1. Consider the following factors in establishing user services:

    a. Concerning the user

        1) Level of user

        2) Activities or functions of user

        3) Purpose for which information will be used

4) Primary document collection which services needs of users

b. Concerning the system

1) Timing

2) Access

3) Comprehensiveness

4) Currency of materials

5) Format of materials

6) Media

c. Concerning operations

1) State size (population and land area)

2) Resources (amount of funds and availability of personnel)

3) Other available services (libraries, computers)

2. Provide essential services such as

a. Searching for materials through manual, mechanical, computer, or combination of techniques

b. Providing information materials

c. Providing access to equipment and facilities

d. Field service

e. Referral service

f. Training services

3. Establish priority for services to significant user groups and to individuals within these groups.

a. Gain efficiency by deciding and acting upon the needs which are more urgent and critical to vocational-technical education

4. Clearly describe for users the basic services performed in all locations of an intrastate network.

a. Clearly outline specialized services for users

b. Develop a method whereby the request of a user which is sent simultaneously to all decentralized locations is dealt with in only one location

5. Comply with legal requirements of the state and national government.

   a. Be alert to laws and regulations with implications for the system (i.e., copyrights, privacy of individuals, etc.)

   b. Establish policies and procedures in compliance with legal requirements.

PRODUCTS

Since this *Guide* is focused on a document-based information dissemination system, products essentially will be printed materials in hard copy or microform. Differentiation between major kinds of products provides a framework within which to identify those products which are essential to an information dissemination system for vocational-technical education. Figure IV-2 illustrates some of the primary products, secondary products and access products which are being published. An access product is defined as a tool which helps to provide access to the knowledge and information found in primary and secondary source materials.

Since ERIC is the primary national resource system for education, it is important that an information dissemination system for vocational-technical education have the essential products of the ERIC system which will assist educators in vocational-technical education. With limited resources, access products should be acquired first, followed by secondary products and then primary products.

Printed products and microforms will continue to be used indefinitely. Computer tapes will increase in use as computer facilities and qualified personnel become available on an increasing scale. A software package, QUERY, a Universal System, is available for use with the ERIC tapes. It is a generalized search application capable of retrieving information from diversely formatted files maintained on magnetic tape, disk, or data cell. Interested organizations or institutions should contact the Chief of ERIC, U.S.O.E., Washington, D.C. for information about QUERY. Printed products, microforms and computer tapes all have a role to play in serving users in an information dissemination system.

Primary Products	Secondary Products	Access Products	
		Printed	Computer Tapes
Dissertations Books or monographs Journal articles Proceedings Technical reports Research reports	Books or Monographs Journal articles reviewing published work of others, etc. Bibliographies Abstracts Reviews Summaries	1. Indexes (Alphabetically ordered) a. Subject b. Phrases c. Key word d. Author e. Title 2. Classification codes a. Hierarchical b. Topical c. Chronological 3. Thesauri-Term association lists which delineate the language of documents and serve as an authority list of terms for users to gain access to documents with these concepts. 4. Rotated descriptor display -provides access to all words in a compound word	ERIC tapes (Educational Resources Information Center -- education) DATRIX tapes (Direct Access to Reference Information: A Xerox Service -- dissertations) USGRDR tapes (United States Government Research and Development Reports -- scientific reports) MEDLARS tapes (Medical Literature Analysis and Retrieval System)

FIGURE IV-2

Examples of Primary, Secondary and Access Products

A list of the products which would be most useful to the vocational technical education community follows.

Access Products

Indexes

AIM-ARM Annual Index[3]

Current Index to Journals in Education[4]

Office of Education Research Reports, 1956-65, Indexes[5]

Research in Education, 1967 Annual Index (Reports)[5]

Research in Education, 1967 Annual Index (Projects)[5]

Research in Education, Annual Index.[5] Began January 1968

Thesaurus

Thesaurus of ERIC Descriptors.[6] Also published in this thesaurus is a descriptor group display by categories and a rotated descriptor display.

Computer Tapes

ERIC report resume files.[7]

ERIC journal article resume files.[7]

ERIC thesaurus file.[7]

DATRIX dissertation files.[8]

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[3]For ordering information, see Attachment 1.

[4]For ordering information, see Attachment 2.

[5]For ordering information, see Attachment 3.

[6]For ordering information, see Attachment 4.

[7]For ordering information, see Attachment 5.

[8]For ordering information, see Attachment 6.

Secondary Products

Abstracts

Abstracts of Instructional Materials in Vocational and Technical Education (AIM). Fall 1967 - Quarterly.[9]
This quarterly publication contains abstracts of instructional materials acquired and processed by the ERIC Clearinghouse on Vocational and Technical Education. Some of these materials are also reported in RIE. This publication should be of particular interest to teachers, curriculum specialists, supervisors, and administrators involved in curriculum development or the use of instructional materials in the teaching-learning setting. Each abstract, a condensation of the report in about 200 words, usually includes the means used to develop the material, the setting for use of the material, and source of available copies. Abstracts are included under the following sections: agricultural, business and office, distributive, health occupations, home economics, industrial arts, trade and industrial, general vocational and technical education, and other resources. An author and institutional index, document number index, and subject indexes are provided.

Abstracts of Research and Related Materials in Vocational and Technical Education (ARM). Began Fall 1967 - Quarterly.[9]
This quarterly publication contains abstracts of research and related documents acquired and processed by the ERIC Clearinghouse on Vocational and Technical Education. Some of these materials are also reported in RIE. These abstracts are useful to researchers, supervisors, teacher educators, education specialists, administrators, teachers and others who have an interest in vocational and technical education. The abstracts are organized by topical groupings: 1) Administration and Supervision; 2) Curriculum; 3) Employment and Occupations; 4) Evaluation and Measurements; 5) Facilities and Equipment; 6) Individuals with Special Needs; 7) Instructional Materials and Devices; 8) Philosophy and Objectives; 9) Research Design, Development, and Utilization; 10) Students, Occupational Guidance and Other Student Personnel Services; 11) Teachers and Teacher Education; 12) Teaching and Learning; and 13) Other Resources. Indexes provide an approach to the abstracts by: 1) subjects, 2) personal and institutional authors, 3) document accession number, and 4) vocational and supporting services.

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[9]For ordering information, see Attachment 1.

Manpower Research: Inventory for Fiscal Years 1966 and 1967 - Annual.[10]
This annual publication contains abstracts of manpower research studies sponsored by various federal agencies. Some of the abstracts have been taken from *Research in Education.*

Office of Education Research Reports. 1956-1965.[10]
Included are resumes of research reports from 1956 to 1965 which were funded by the U.S.O.E. Bureau of Research. These reports predate the ERIC system. A second volume contains author, institution, subject, and report number indexes to these resumes.

Pacesetters in Innovation. 1966- Annual.[10]
Resumes of Projects to Advance Creativity in Education (PACE) program is authorized and funded under Title III, Supplementary Centers, and Services, of the Elementary and Secondary Education Act of 1965. Resumes which highlight the significance of each project are arranged sequentially by ES accession numbers and are indexed by subject, local education agency, and project number.

Research in Education (RIE). November 1966- Monthly.[10]
This monthly abstract publication has five sections. The Document Section contains abstracts of documents submitted by all the ERIC Clearinghouses. They are numerically sequenced by ED number as well as grouped alphabetically by the code of each clearinghouse, e.g.:

ED 022 124 AC 022 629 (Adult Education Clearinghouse)
ED 022 461 JC 680 335 (Junior College Clearinghouse)
ED 022 864 VT 044 263 (Vocational and Technical Clearinghouse)

The Document Section also has three indexes: subject, author, institution. The Project Resume Section contains abstracts of projects funded by the U.S. Office of Education, Bureau of Research, or National Center for Educational Research and Development (NCERD) and has three indexes: subject, author, institution. The section gives visibility to research in progress. When completed, the results of the research are reported in the Document Resume Section. The Accession Numbers Section is a cross reference index between clearinghouse accession numbers and ERIC Document (ED) numbers, e.g.:

AC 002 629 ED 022 124

The ERIC Document Reproductions Section is an explanation of the ordering procedure for microfiche (MF) and hard copy (HC) from the ERIC Document Reproduction Service (EDRS). How to Order ERIC Publications, gives title, price and ordering information for ERIC publications.

[10]For ordering information, see Attachment 3.

Annotations

Current Index to Journals in Education (CIJE). Began April 1969 covering publications from January 1969- Monthly.[11] CIJE, a companion volume to RIE, covers over 500 journals in the field of education. Each entry includes the title of an article, author, journal title, issue, paging, date, descriptive terms, and an annotation. In some instances, the descriptors serve as an annotation. Articles are indexed using the *Thesaurus of ERIC Descriptors*. CIJE includes a Main Entry Section, Subject Index, and Author Index. The Main Entry Section is numerically sequenced by ERIC Journal (EJ) number as well as arranged by broad descriptors which make up a total of 52 descriptor groups. Within each group, items are listed alphabetically by the code of each clearinghouse, e.g.:

EJ No.	Descriptor Groups	CH Accession No.	
EJ 000 053	020 Administration	AC 500 017	(Adult Education CH)
EJ 000 697	190 Evaluation	CG 500 191	(Coun. & Pers. Serv. CH)
EJ 000 697	190 Evaluation	VT 500 162	(Voc. & Tech. Ed. CH)

Bibliographies

ERIC Products 1967/1968- Annual.[12]
ERIC Products is an annual bibliography of those publications of the ERIC Clearinghouses reflecting information analysis activities. It includes all substantial bibliographies, review papers, and state-of-the-art publications identified as ERIC publications. Entries in the bibliography are arranged alphabetically by the name of the clearinghouse.

Reviews

Review papers and state-of-the-art publications produced by the ERIC Clearinghouses are found in the annual publication, *ERIC Products*. Availability of individual items is given. Reviews published by other agencies as well as ERIC are announced in *Research in Education* and ARM. Usually these can be found under the descriptor, Research Reviews (Publications).

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[11] For ordering information, see Attachment 2.

[12] Available from EDRS
ERIC Products 1967/68 ED 029 161 (Price MF-$0.25; HC $1.30)
1968/69 ED 034 089 (Price MF-$0.25; HC $1.80)
1969/70 ED 041 598 (Price MF-$0.25; HC $2.45)

Primary Products

Availability of the majority of primary products in the ERIC system has been made possible at a low cost by utilizing microfiche. Full texts of these documents are available from the ERIC Document Reproduction Service (EDRS).

EDRS supplies copies of these documents in two forms:

- Microfiche (MF) -- 4" x 6" sheet of microfilm on which up to 70 pages of text are reproduced in greatly reduced form.
- Hard copy (HC) -- reproduction of the document on paper at about 70 percent of the original size.

The cost of each document cited in *Research in Education*, both in microfiche and hard copy, appears in the citation. Document orders should include the ED number, type of reproduction (HC or MF), and the number of copies. Order from:

ERIC Document Reproduction Service
The National Cash Register Company
4936 Fairmont Avenue
Bethesda, Maryland 20014

Individual documents may be ordered at 25 cents per page of microfiche or five cents per page of hard copy. A 50 cent handling charge should be added to all orders, in addition to state sales tax, when appropriate.

Monthly standing orders for microfiche copies of all ERIC reports announced in each issue of *Research in Education* average $150 per month, at the reduced rate of 11 cents per microfiche. Complete microfiche orders for the special collections are also available.

If the total ERIC collection is not wanted, standing orders may be established for those documents announced in *Research in Education* by a particular ERIC clearinghouse. These special ERIC clearinghouse packages are available at the regular rate of 25 cents per microfiche. Each of the described standing orders or special collection purchases should be made through the ERIC Document Reproduction Service (EDRS).

The special ERIC clearinghouse package for vocational and technical education includes the AIM and ARM microfiche collections, as well as all inputs to RIE. Reports in AIM and ARM with VT numbers only are available as part of a VT-ERIC set, though not available on an individual basis. Agencies which have the VT-ERIC set and microfiche reproducing equipment can duplicate those microfiche

for users. Reports in these sets are identified in a resume by the phrase MF AVAILABLE IN VT-ERIC SET. Sets covering the documents in individual issues of AIM and ARM are processed into the ERIC system and have individual ED numbers for each set. Organizations that have the total microfiche collection for RIE or VT-ERIC will also have these sets. In addition to these products, the information dissemination unit should organize its collection of publications which are not scheduled for the ERIC system, or the unit should have means of borrowing such publication for users.

INFORMATION ANALYSIS PRODUCTS

A recent study of vocational-technical education information users has revealed that they favor information that is relevant, quick to obtain, current, and brief. These desired characteristics can be achieved by converting information in the document base into more useful forms. This process of knowledge conversion is known as information analysis.

Many information analysis products are targeted for specific audiences. The "analysis," however, may be for the purpose of achieving comprehension, application, analysis, synthesis, or evaluation of information. Bloom's Taxonomy might serve as a useful model for information analysis activities.[13] Such a model has the advantage of providing organization and strategy for an information analysis program, as well as relating the program to educational theory and differentiating products by purpose.

To further develop the rationale for information analysis, definitions for each of the information analysis product types are provided.

Review. - A general survey for purposes of examining or inspecting the knowledge contained within a discreet category of documents.

Summary. - An abridgement, or compendium of a preceding discourse, a recapitulation.

Abstract. - Informative or descriptive narration which briefly summarizes the substantive content and its organization.

Annotation. - Explanatory notes or comment on the substantive content and organization of a document.

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[13]Benjamin S. Bloom, ed., *Taxonomy of Educational Objectives* -- Handbook I: Cognitive Domain (New York: David McKay Company, Inc., 1956).

Interpretation. - A reordering, rearrangement, or new view of material for the purpose of explaining.

Translation. - A faithful and accurate rendering of a document into another form.

Extrapolation. - A projection, extension, or expansion of the substantive content of a document by inferences based upon assumed continuity, correspondence, or other parallelism in order to provide new knowledge.

Application. - The specification of ways that information in documents can be applied.

Analysis. - The separation of a document's contents into its component parts so that the relative hierarchy of ideas is made clear and/or the relationships are made explicit; to indicate its organization.

Synthesis. - The combination of the content of several documents in such a way as to constitute a pattern of structure not clear before.

Evaluation. - Judgment about the value of the content of documents in terms of internal evidence and external criteria.

But, information analysis products do not always neatly fall into the categories suggested in the preceding list; however, the categories provide a basis for planning targeted information analysis papers. Information analysis or knowledge conversion, although not a new concept, is being newly applied to the educational research literature. The basic purpose is to make information more useful in solving problems.

A concept currently employed by the ERIC Clearinghouse on Vocational and Technical Education involves the choice of priority problems in the field upon which literature is available within the ERIC document base. Central ideas and variations are chosen, interpreted, analyzed, evaluated, and synthesized by commissioned scholars in state-of-the-art papers. These, in turn, become the basis for differentiated, targeted papers prepared by writers who have the benefit of practical experience or interface with practitioners. These targeted papers provide educational practitioners with "alternatives for action" with which to solve current, critical problems.

Use of information analysis products in a state information dissemination system improves information flow and enhances chance of research utilization. Information dissemination system staff should endeavor to utilize extant information analysis products in their program. In disseminating such products, special attention

should be given to a "match" between user and product which takes into consideration the user's need, purpose, and capability. For example, a state-of-the-art paper may be nearly useless to a teacher, while a practical interpretation of research findings may be inappropriate for a researcher.

PRODUCT DEVELOPMENT

Since product development is an expensive proposition, a state information dissemination system staff should always consider alternative approaches for the most effective use of limited resources. Identification and use of existing products should be among those first considered to meet needs.

Selection of an appropriate product already in existence can save valuable professional and clerical time in the local agency. The scope and quality of already-developed products may exceed that which can be accomplished in the state system because of the limited resources available for product development. It is recommended that a search be made of the ERIC system for information analysis products before plans are initiated to produce these kinds of products.

It is suggested that the following products be produced by a state information dissemination system before more extensive product development is undertaken.

Brochure. - A brochure is one media for advertising the services of the state information dissemination system. It may be used as an inclusion in correspondence, and as a handout in training sessions.

Abstracts. - Abstracts, or brief annotations of documents issued within the state and not in the ERIC system could be produced for use by the searching services. These might be packaged along with the ERIC abstracts on particular topics. Repackaging of selected abstracts from outside sources to meet the needs of a particular user group can be a valuable service of an information agency. Abstracts are relatively inexpensive to reproduce and mail.

Training materials on the information systems. - The state information agency should conduct information workshops and provide other means of training users for effective utilization of the system. Various materials are needed to aid in the conduct of workshops or otherwise achieve training objectives. These materials may include workshop outlines, information handouts, and audio-visual materials (e.g., overhead projection transparencies, filmstrips, slides, motion picture films, video-tapes, or audio-tapes). Such materials

should be designed to achieve specific objectives which increase the user's capability to use the system and inclination to do so.

Considerable caution is urged in initiating development of other kinds of products. They are: 1) costly to produce, 2) not used to the degree anticipated, and 3) difficult to produce. Some examples of products which should be approached with caution are given below.

Information Analysis Products. - Some state information dissemination system staff may be uniquely qualified to produce or sponsor specific information analysis products. Careful planning should precede such development with full consideration given to product purpose, target, and uniqueness. Useful guidelines for purpose and target may be found in preceding sections of this *Guide*. Staff of the ERIC Clearinghouse on Vocational and Technical Education are in a position to identify information analysis products already under systematic development at the Clearinghouse or elsewhere.

Newsletters. - Newsletters may be used to disseminate information about document availability, research in progress, system development, or programs.

Bibliographies. - Bibliographies have usefulness only when compiled for specific purposes and audiences and when back up of materials is available. The search upon which the bibliography was based should be described in its introductory sections. This description should specify the literature searched, period of time covered, and search strategy. Such a description provides the user with a guide to further searching while circumventing need for further search of the same collection.

PRODUCTS OF VOCATIONAL-TECHNICAL EDUCATION CENTERS

Acquaintance with the agencies which produce research reports and other materials will give the information dissemination staff an overview of the publication activities which exist. An up-to-date file of their publication lists should be maintained. This anticipates questions about the publications of these agencies. Most of these reports are available through the ERIC system as EDRS microfiche or hard copy. This is especially helpful for out-of-print items. Information about some of these agencies follows.

The Center for Vocational and Technical Education

The Center for Vocational and Technical Education has been established as an independent unit at The Ohio State University

with a grant from the U.S. Office of Education. It serves a catalytic role in establishing consortia to focus on relevant problems in vocational and technical education. The Center is comprehensive in its commitment and responsibility, multidisciplinary in its approach and interinstitutional in its program. Objectives of The Center are:

1. To provide continuing reappraisal of the role and function of vocational and technical education in our democratic society;

2. To stimulate and strengthen state, regional, and national programs of applied research and development directed toward the solution of pressing problems in vocational and technical education;

3. To encourage the development of research to improve vocational and technical education in institutions of higher education and other appropriate settings;

4. To conduct research studies directed toward the development of new knowledge and new applications of existing knowledge in vocational and technical education;

5. To upgrade vocational education leadership (state supervisors, teacher educators, research specialists, and others) through an advanced study and in-service education program;

6. TO PROVIDE A NATIONAL INFORMATION RETRIEVAL, STORAGE, AND DISSEMINATION SYSTEM FOR VOCATIONAL AND TECHNICAL EDUCATION LINKED WITH THE EDUCATIONAL RESOURCES INFORMATION CENTER LOCATED IN THE U.S. OFFICE OF EDUCATION.

The activities and products of The Center's research, development, training, and information components are many and varied. Products of these components of The Center are published in five series shown below.

Research and Development Series. Reports of research projects conducted by The Center are directed toward the development of new knowledge and new applications of existing knowledge in vocational-technical education.

Leadership Training Series. Summaries of conferences and seminars sponsored by The Center are published. Through these advanced study activities and in-service education programs, The Center is attempting to upgrade vocational education leadership--state supervisors, teacher educators, research specialists, and others.

Bibliography Series. Bibliographies are compiled in conjunction with research projects. Abstracts of instructional materials and research materials are produced quarterly.

Information Series. Review and synthesis of research in the vocational and industrial arts service fields are published in three to four year cycles. Functional areas (e.g., administration) and problem areas (e.g., economics of vocational education) are also covered in this series.

Center Related Series. Research reports and instructional materials are produced in cooperation with other R & D components, and other university personnel.

The Center's products are described and indexed in a comprehensive publications list available from: Dissemination Specialist, The Center for Vocational and Technical Education, The Ohio State University, 1900 Kenny Road, Columbus, Ohio 43210.

Center for Occupational Education

The Center for Occupational Education is located at North Carolina State University at Raleigh, and has been established as an integral unit within the University. It is part of the program conducted under the auspices of the U.S. Office of Education. The program of the Center cuts across the Schools of Agriculture and Life Sciences, Education, Liberal Arts, and Physical Sciences and Applied Mathematics at North Carolina State University. Cooperating and participating departments include the Departments of Adult Education, Agricultural Education, Economics, Experimental Statistics, Industrial and Technical Education, Occupational Information and Guidance, Politics, Psychology, and Sociology and Anthropology.

The total program of the Center for Occupational Education, which has emphasized research in crucial problems in occupational education since its inception, has been divided into five complementary programs, including a research program, an evaluation program, a research development program, a research training program (in occupational education), and a services and conferences program. The Center is designed and organized to serve the nation, with special orientation to the southern states.

The products of the Center are published in five series, which have import for a state information dissemination system:

Center Research Monograph Series. This series, which has been established as a refereed publication series, reports research and evaluation projects that are directed toward extending theoretical bases or methodological developments, or toward the development validation of new models.

Center Research and Development Report Series. This series, which also has been established is a refereed publication series, reports the findings of applied research and evaluation projects or the results of developmental and action projects.

Center Monograph Series. This series reports scholarly manuscripts or position papers which are intended to provide the underlying framework or rationale for the initiation of research and related projects that may be conducted by the Center, by a consortium of universities or other institutions and agencies, or by personnel in other universities.

Center Seminar and Conference Report Series. This series reports the proceedings of seminars, conferences, workshops and institutes conducted under the auspices of the Center.

Center Miscellaneous Report Series. This series reports other activities of the Center such as exploratory research projects and feasibility studies which are not included in the four publication series listed above.

Information concerning publications of the Center may be obtained by writing to: Center for Occupational Education, North Carolina State University at Raleigh, 1 Maiden Lane, Raleigh, North Carolina 27607.

Center for Studies in Vocational and Technical Education

The Center for Studies in Vocational and Technical Education was established at The University of Wisconsin in the Fall of 1964 under a five-year grant from The Ford Foundation. Its functions were to examine, evaluate, and further the development of the nation's system of occupational education by means of interdisciplinary research, graduate study, conferences, the establishment of a national depository of reference materials, and the dissemination of publications resulting from research and conferences. In addition to the conference proceedings and the research monographs, the Center sponsors a series of periodical publications, especially the *Journal of Human Resources*, which is rapidly gaining in reputation as a major outlet for research articles in this field. Articles in this journal are annotated and indexed in *CIJE*.

A summarization of the Products section follows:

1. If resources are limited, acquire access products first, followed by secondary products, and then primary products.

    a. Use ERIC and VT-ERIC products.

2. Use information analysis products to assist in diffusion of research findings and to increase the chance of utilization of research.

3. Develop products appropriate to the needs of users provided existing products do not meet these needs.

   a. Consider various products.

   b. Consider repackaging products.

   c. Coordinate products development with that in other states.

   d. Products should be developed by the best qualified agency.

4. Continue to identify need for information products.

   a. Consider user group priorities.

   b. Consider problem area priorities.

5. Become knowledgeable about Center and agencies which produce vocational-technical education products.

LOCATIONS

SITE SELECTION

State departments of education, state divisions of vocational education, departments of vocational education in state universities, state libraries, university libraries, and other existing agencies may provide a suitable setting for the system. Whenever possible, information dissemination system headquarters should be located where it can provide better service to those with primary functions in vocational-technical education. Existing communication channels, transportation routes, parking facilities, and mailing procedures should also be considered and evaluated in terms of supporting the services and products to be offered to the various user groups.

The possibility of eventual expansion of the information dissemination system should be considered during planning stages. If more facilities and equipment will be needed in the immediate future, it may be more feasible and economical to make provision for them at the outset. Possible changes in user requirements should also be considered during planning stages.

The internal placement of the information dissemination system within the parent agency will be influenced by existing

organizational patterns and administrative policies as well as statutory provisions within the state. Planning for placement within the parent structure should be a cooperative effort of the organizational leaders concerned. The proposed system should be analyzed in relation to how it can best be incorporated into the overall plan. Maximum service to user groups should be a prime consideration.

DECENTRALIZATION

Decentralization of the information dissemination system can provide more effective user service which capitalizes on direct interpersonal relationship between system and user. It may be a way to achieve more equitable cost-sharing by interested agencies.

User population distribution may indicate where decentralized services are needed. Large volume, great urgency, and high frequency of use could be an indication of the need to decentralize or expand. Any consideration of decentralization or a move of headquarters location should be deliberate and account for cost.

When the system is to be decentralized, it is important that central coordination be maintained. For example, as an alternative to separate complete collections, it may be advisable to maintain a master file of all ERIC microfiche and possibly hard copy at the central office and have additional appropriate microfiche sets at the decentralized locations, along with microfiche readers. Issuing duplicate microfiche to users at any location prevents loss of the original copies and keeps the master collection intact.

A summarization of points for consideration are:

1. Plan a suitable central site early.
    a. Consider site location in relation to
        1) organizational and operational aspects.
        2) statutory provisions within the state.
        3) location of high priority user groups.
        4) proximity of complementary information systems, and libraries.
    b. Consult those to be affected.
    c. Plan for change and expansion.

2. Select decentralized sites if circumstances warrant it.

   a. Consider needs to be met at various locations.

   b. Consider operational efficiency and effectiveness.

   c. Consider available resources.

   d. Maintain central coordination.

   e. Utilize existing agencies and libraries at decentralized sites.

3. Periodically, consider the necessity for further expansion of central facilities or decentralization.

   a. Consider the need.

   b. Consider the cost.

EQUIPMENT AND FACILITIES

Equipment and facilities used in a state information dissemination system should be compatible with equipment, products, and techniques used nationally, notably by the Educational Resources Information Center (ERIC), its network of clearinghouses, and the ERIC Document Reproduction Service (EDRS). Indexing systems used in the state should be compatible with AIM, ARM, and *Research in Education*. These three publications, ERIC microfiche, and other products will require certain basic equipment such as files, shelving, microfiche readers, and microfiche reader-printers.

Equipment and facilities are for the basic purpose of handling products, rendering service to users, and maintaining daily operations. These aspects of proposed operations should be studied and acquisition of necessary equipment and facilities should be planned. A schedule which parallels projected activities is essential to effective program development.

EQUIPMENT PRIORITIES

Orderly acquisition of equipment within the limits of resource allocations can be accomplished by a system of priorities established during planning stages. Three suggested priority groupings follow.

Equipment Priority Classification I. Basic equipment is necessary to: 1) read and/or reproduce microfiche, 2) maintain normal office operations, 3) provide space for users,

and 4) provide shelving and filing of materials. Directories of microform equipment sources should be studied.[14]

1. Microfiche readers . . . approximate price range: $100 to $400. Determination of specific models and prices should be upon basis of need.

2. Reader-Printers . . . approximate price range: $300 to $1500. Total document reproduction with a reader-printer is expensive and time-consuming. Reproduction of a few pages directly from a microfiche or microfilm affords an efficient means of providing service. A single page requires 10 to 50 seconds at a cost of eight to 10 cents per page depending on the machine.

3. Photo dry copiers . . . prices vary. The dry copier permits copying of hard copy not available on microfiche. Restrictions on reproduction of copyrighted materials should be honored. See Attachment 8 for information about the present status of copying and the copyright law.

4. General office and library equipment . . . needs will vary with the size of operation, but nearly all state dissemination systems will require the following equipment arranged in a table which will aid in planning.

Item	No. for Prof. Staff	No. for Tech. Staff	No. for Clerical Staff	No. for Users
Desks, executive				
Chairs, executive				
Desks, typing				
Chairs, typing				

[14]Microfilm Directory: *Cameras, Readers, Film, Reader/Printers: A Guide for the Buyer and User*, Information and Records Management, Section 11, December/January 1970 (published by Information and Records Management, 41 East 78th Street, New York City 10016).

AD 701 600 *Microfiche Viewing Equipment*, R. F. Gordon, Defense Document Center, Alexandria, Virginia, March 1970, 55 pp. (obtain from National Technical Information Service, Springfield, Virginia 22151. Microfiche $0.95, Hard copy $3.00. Will accept money order, check, or coupons).

Item	No. for Prof. Staff	No. for Tech. Staff	No. for Clerical Staff	No. for Users
Desks, user				
Chairs, user				
Chairs, visitor				
Tables, work				
Chairs, work table				
Tables, user				
Chairs, user				
Tables, carrels, for microfiche reader-printer				
Typewriters, electric				
Dictating machines				
Shelves, double faced				
Shelves, single faced				
Cabinets, filing				
Footstools, rolling				
Boards, bulletin				
Files, card catalog (3x5 cards)				
Files, microfiche				
Mimeograph machine				
Telephones				
Calculating machine				
Wastepaper baskets, ash trays				

Equipment Priority Classification II. Equipment is needed to accommodate expansion of the information collection and further facilitate the dissemination of information.

1. Additional files and shelving.

2. Microfiche exposure and developer unit. Providing duplicates of microfiche to users who have access to microfiche readers has two advantages. First it prevents loss or damage of master copies of microfiche. Second, it permits more prompt service on requests and negates the need to return borrowed materials. In general, users should be directed to EDRS to purchase microfiche. The reproduction of microfiche for a user should be based upon the considerations of: 1) providing service to high priority groups of users and urgency of need, 2) providing microfiche on individual documents from among a series of documents grouped together under one ED number.

Equipment Priority Classification III. Some equipment is not essential to the primary dissemination mission and may be too high in cost.

1. Microfilmer . . . This unit is for microfilming original documents. In regard to microfilming or microfiching materials, it is recommended that efforts should be made to contract for this service with a reliable agency that will meet COSATI standards for filming. Purchase and operation of this equipment may prove too costly.

EQUIPMENT SELECTION

Selection of equipment should be upon the basis of logical general criteria. General criteria may include:

Durability

Performance

Simplicity of operation

Cost (i.e., initial and maintenance)

Compatibility with present and future systems

Space requirements

Adaptability to other use

Competitiveness

Modernity

Sales representatives will demonstrate equipment. Specifications should be outlined before actual purchase arrangements are made, perhaps by competitive bids.

Equipment that is used should be compatible with the overall system and with the task which is required of it. For example, microfiche reader-printers should be capable of rapid printout. Microfiche readers should provide sharp images which can be read without eyestrain.

The continuous updating of equipment is necessary to keep pace with technological advances, system procedural changes, and replacement needs. Plans should be made for annual allocation of resources for this purpose. Leasing may be considered as an alternative to purchase, and maintenance contracts may be appropriate.

EQUIPMENT LOCATION AND OPERATION

Access to equipment by users is desirable. In order to maintain economical operation of equipment and still provide user access, it is necessary that system personnel train and assist users. Heavy use of equipment may dictate the necessity for imposing a schedule of charges in order to sustain the service. Maintenance, repair, and replacement must be included in budgetary plans.

It is desirable to provide at least one separate room for users which contains a desk, chair, microfiche reader, dictating machine, and typewriter. Other users can be satisfactorily serviced with a desk, chair, and microfiche reader.

EQUIPMENT SUPERVISION AND USE

Under supervision by competent personnel, free access to equipment by qualified users should be maintained within the limits of budget and within the limits of established rules; however, some specialized equipment (microfiche reproduction) should be operated only by trained personnel. If a schedule of charges is required, a systematic routine for collection should be established.

While original cost, maintenance costs, and repair costs play an important role in formulating user regulations, these costs

play an even more important role in the decisions about acquiring equipment. Probable levels of utilization should be estimated during decision-making relative to acquisition. Eventual unit cost at various utilization levels must be realistically assessed.

FACILITIES

Minimum requirements for facilities would include separate offices for professional personnel, space for secretarial-clerical personnel, a workroom or laboratory for technical personnel, a service area for users, and separate offices for longer-term users. The extent to which the functions may be carried out in space used for other purposes as well, depends upon the scope of activities in each case. The following general information about space may be helpful.

Space	Sq. Ft.	No. of Personnel	Total Sq. Ft.
Offices			
professional @	120	X	
secretary @	120	X	
visitor office @	120	X	
Workroom or laboratory	240		240
Utilities and storage	180		180
Shelving and user service	400		400
Duplication area	300		300

Since available space is usually in existing buildings, it is important to make the following checks:

1. Is the flooring sufficiently reinforced to support shelving with books and periodicals, and other heavy equipment?
2. Is the electrical system capable of handling the amount and kind of equipment used?
3. Is ventilating, heating and air conditioning adequate?
4. Does the space lend itself to suitable arrangement and is it sufficiently flexible to permit change?
5. Does the space lend itself to future expansion?

Need for physical space will increase as the number of personnel, amount of equipment, and level of operations increase. Plans for adequate housing of personnel, equipment, and products are necessary from the outset. Decentralized locations within a state will increase the total need for equipment and facilities.

Facilities are difficult to improve because of cost, but continuous evaluation of physical facilities is desirable. At least four procedures can improve facilities. First, proper maintenance of existing rooms can improve their appearance and usefulness. Second, rearrangement of furniture and equipment can often improve the flow of work and space utilization. Third, remodeling of existing structures can provide a low cost alternative to new space and improve space utilization. Lastly, planning of new facilities can result from evaluation of facilities. A summary of important points follows.

1. Plan equipment and facilities upon basis of products to be handled, services to be rendered, and users to be served.
    a. Study products, services, and users projected in plans.
    b. List necessary equipment.
    c. Establish a list of priorities for acquisition of equipment.
    d. Schedule the acquisition of equipment.
2. Check equipment specifications for compatibility with ERIC products and for meeting the requirements of use.
3. Select equipment on basis of general and specific criteria.
    a. Check each item against general criteria.
    b. Compare each item against the specifications of competitive items and the requirements to be met by the item.
4. Locate equipment for user convenience.
5. Operate and maintain equipment carefully.
    a. Use qualified personnel.
    b. Establish rules on use.

6. Educate users on equipment use.

7. Develop a schedule of charges.

   a. Sustain services by charging.

   b. Systemize collection.

8. Supervise use of equipment by users.

9. Plan for updating of equipment.

   a. Keep up with the technological advances.

   b. Be alert to national system procedural changes.

   c. Schedule regular replacement of equipment.

   d. Consider leasing as an alternative to purchase.

10. Plan housing to accommodate equipment, personnel, and operations.

   a. Plan for growth.

   b. Consider decentralization.

ADMINISTERING AND OPERATING ACTIVITIES

The operation of an information dissemination system requires the accurate performance of many detailed tasks. This requirement makes it essential to develop procedure manuals and guidelines for all areas of activity within the authority of the information dissemination system, and to require periodic review and updating of these tools on a regular basis.

Within the Research Coordination Unit, it is important that responsibility be assigned and authority granted to specific individuals for major functions of the program. Levels of responsibility and delegation of authority should be clearly identified and accountability for this responsibility and authority clearly understood. This holds true for all personnel at any level of performance.

Two components of the program of the information dissemination system which are often considered to be primarily internal operating activities are: 1) acquisition of materials and 2) processing materials. Acquisition and processing of materials for the system is already being done on a large scale by VT-ERIC, other clearinghouses, and Central ERIC. Because these functions are performed

at the national level, emphasis at the state level should be given to acquiring and processing vocational and technical education materials generated in the state, especially those not scheduled for the ERIC system. A few reference tools and periodicals will also be needed.

ACQUIRING MATERIALS

Criteria and requirements for materials to be retained in the state system should be determined in advance, including the substantive scope of materials and kinds of materials (e.g., master's papers, instructional materials). Emphasis should be on gift materials which are current. Specific titles, when known, can be solicited. After material is received, further screening may be required to determine whether an item is already in the ERIC system; and if not, whether it should be forwarded to VT-ERIC, or recorded and retained. If its usefulness has mere transitory value, it should not be retained.

If items are ordered, an order file must be maintained and the requisitioning process required by the state followed. A suggested procedure for ordering follows. A clerk-typist can be trained for this task.

1. Citation to be ordered is checked to determine whether it is already in the collection. Files to be checked are:

   a. Current Order File

   b. Temporary Control File (see Oklahoma procedures, Appendix 4)

   c. Card catalog under personal author. If not found, check corporate author. If not found, check title.

2. If item is not found, a 3" x 5" order slip is typed with two carbons.

3. Original slip is sent with a form order letter to publisher, or with appropriate requisition through appropriate channels. If an item is being requested as a gift, the order form is used with an appropriate request letter.

4. One carbon of order slip is filed by order date for use in follow-up of items not received.

5. Second carbon of order slip is filed by author for use in avoiding double orders.

When materials are received, the Order File is checked. If item was ordered, both slips are pulled, dated and filed in Received Files (one by author, one by received date). If an item was not ordered or requested, it is checked in the Temporary Control File and the card catalog to determine whether it has already been received.

PROCESSING MATERIALS

Standard methods for identifying the existence of a document in an information system require a unique identification of the document. This identification may take the form of a code (e.g., numerical, alphabetical, etc.) used in conjunction with retrieval capability by: 1) the author of a report, 2) subjects or descriptors which represent substantive content, 3) title of a report,[15] and 4) other retrieval capabilities such as sponsoring agencies if these are essential. This may be accomplished by utilizing one or more of the following:

1. Printed index systems
2. Manual card systems
3. Punched card systems
4. Computer systems

Processing materials is a time-consuming and expensive process; therefore, a state information dissemination system should build on existing information system programs where materials have already been classified and indexed. The two examples that follow exemplify this.

1. Example of a printed index system.
   The author and subject indexes to ERIC materials provide access to these materials without further processing. Microfiche or hard copies are filed or shelved by the accession identification number.

2. Example of manual card system.
   Library of Congress catalog cards for books can be purchased and the cards provide an identification number (Library of Congress, or Dewey Decimal), authors, subjects, and title in the event that a small book collection is needed.

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[15] It should be noted that title indexes are not used in the ERIC system.

Local materials that are not in the ERIC system or other systems will require cataloging. There are many manual card systems which could be used for processing these materials. Three examples are:

1 Catalog Card

12
Nuader, John
Statistics for Dropouts in Two Counties.
Michigan State University, East Lansing,
College of Education.
1967 15 p. (MSU Bulletin 3)

2 copies

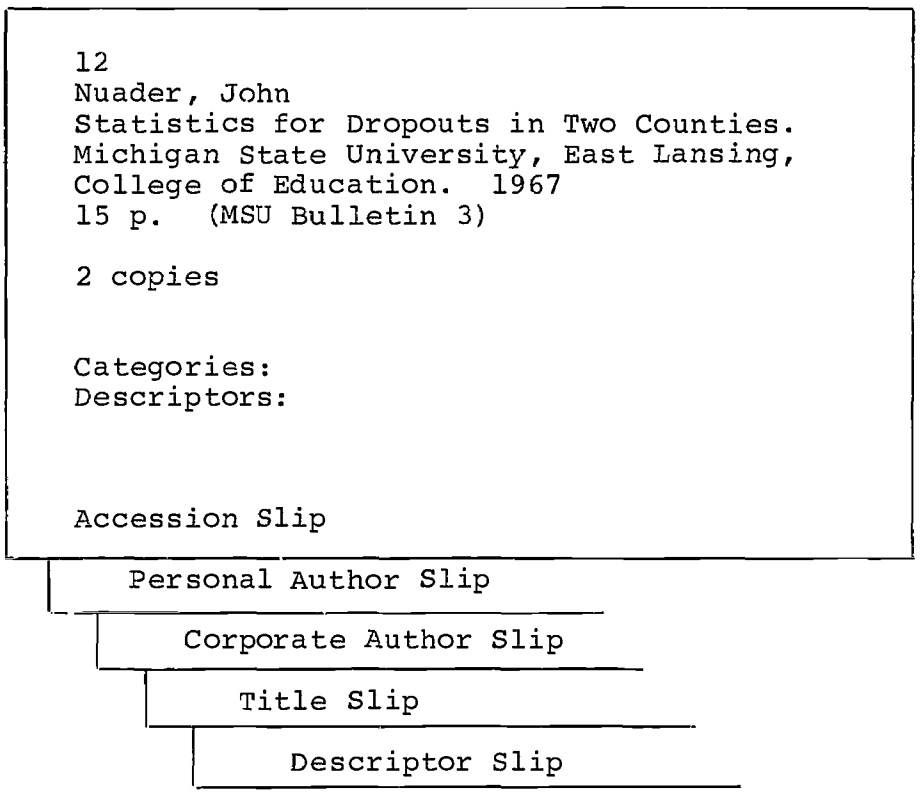
Categories:
Descriptors:

The number of cards to be typed, mimeographed, multilithed, or xeroxed would depend upon the number of entries for filing that are needed, e.g., accession file, author file, title file, category file, descriptors. Multiple copies of the card are made and the word for filing on each card is underlined.

Accession File: 12
Author File: Nuader, John
Etc.

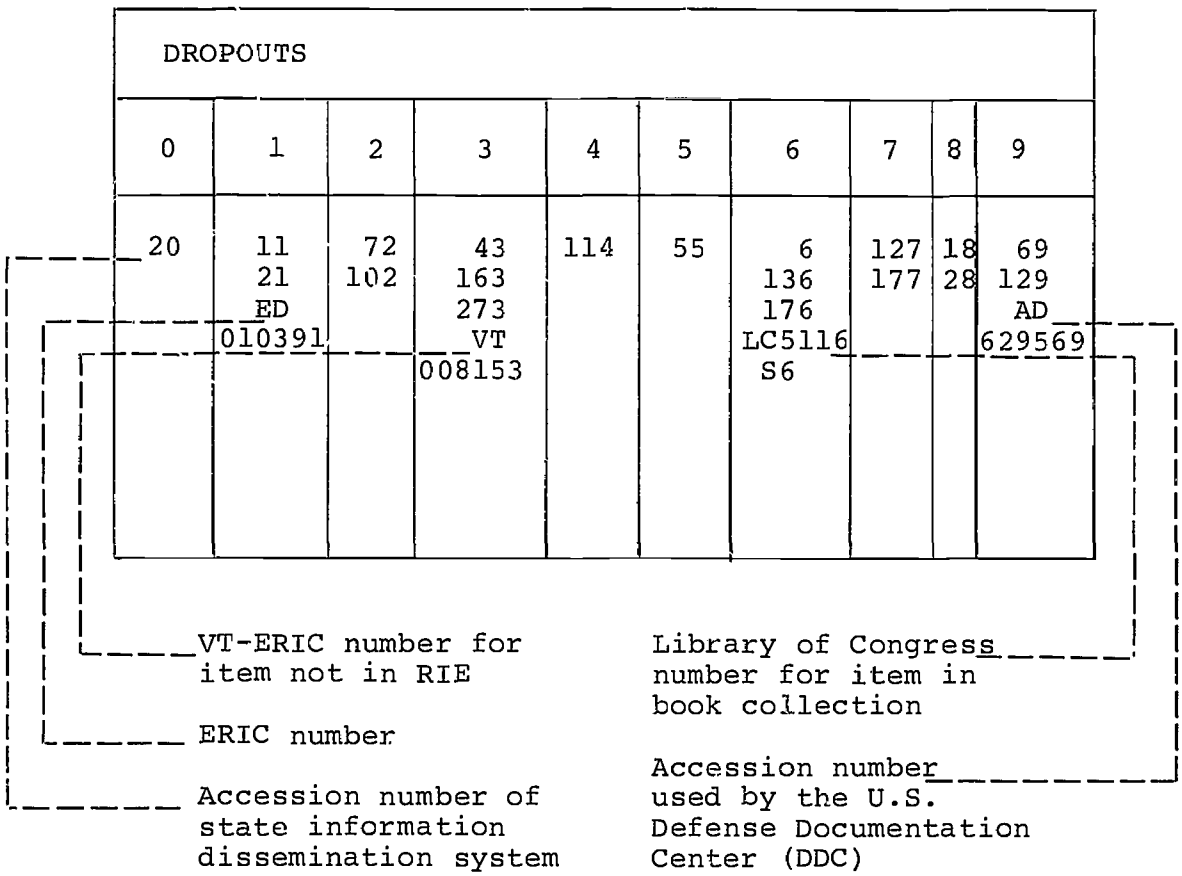
A good card stock should be purchased if the files will have heavy usage by many persons.

2. Snap Form



A form with six to 10 carbons and utilizing different colored slips can be purchased which requires only one typing and no further reproduction of multiple copies. This form is torn apart after typing and the filing word is underlined. This is paper stock and can be used if the files do not have heavy usage by many persons.

3. Key-Word Card



In the key-word system, a separate 5" x 8" card is made up for each word that the information dissemination staff wishes to include in the subject index file. These key-word cards are placed in an alphabetical file, and are used for recording the accession numbers of research reports which pertain to the key-word subject. The accession file numbers are assigned in numerical sequence as the reports are acquisitioned for storage. After the accession number has been assigned to a report, that number is placed on each appropriate index card.

Each key-word card is divided into 10 columns numbered 0 to 9, and the accession number is placed in the column corresponding to the last digit of the number. For example, an accession number of 382 would be placed in the column number 2. For retrieval, key-word cards are pulled for as many identifying terms as possible.

The key-word cards are then searched for matching numbers, a system called "concept coordination."

As an example, if the information dissemination system received a project report dealing with the dropout, instructional method and curriculum in the high school, the key-word cards of each of these four subject descriptors would be pulled and an accession number assigned to the report would be placed in the appropriate column of each card. Retrieving information is the reverse procedure of storage. The *Thesaurus of ERIC Descriptors* is used as the source of key words.

This type of card could also incorporate the identification number of selected reports from other systems as shown in the example. Other files, using the same method can be set up by author of the report, the institution or location of the organization conducting the research, etc. The report accession number is placed on these cards in the same manner as on the key-word card.

Another simplified procedure, utilizing KWIC (Key Word in Context) titles as substitutes for descriptors as index terms, was prepared for the Oklahoma Research Coordination Unit and the Curriculum and Instructional Materials Center by Taylor.[16] A complete description is included as Appendix 4.

STORAGE OF MATERIALS

The mere physical storage of items can become a management problem. ERIC microfiche can be easily stored in standard files of the correct size, an advantage of this media. Other materials of varying sizes are difficult to store and some combination of shelves and filing cabinets is advisable. When accessioned and stored in a consecutive number series, much of the problem of space planning is overcome.

A summary of this section follows.

1. Levels of responsibility and delegation of authority should be clearly identified and accountability for this responsibility clearly understood by staff for all major functions and tasks at each level.

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[16]Cellanna I. Taylor, *Procedure Manual for Processing Materials into the Oklahoma State Library for Vocational and Technical Education* (Columbus, Ohio: The Center for Vocational and Technical Education, The Ohio State University, June, 1970).

2. Develop and keep updated manuals or guidelines for all activities.

3. Develop methods to acquire vocational-technical education materials within the state.

   a. Coordinate efforts with those of Central ERIC and VT-ERIC.

   b. Select and process items of interest within the state which are not scheduled for the national system.

4. Plan processing and retrieval procedures which are compatible with those used by ERIC.

   a. Use simplified shelving, indexing and filing techniques.

RESOURCES

Resources (i.e., personnel, equipment, supplies, facilities) are needed to establish, operate, and maintain the information dissemination system and must receive consideration during planning stages. While objectives, services, and products are being determined, resources must be identified. Sometimes lack of available resources will limit objectives or delineate parameters of current operation.

ALTERNATIVE MEANS

Costs for alternative means of operating the information dissemination system should be determined. Answers should be sought for the following questions:

1. What are the professional staff qualifications and requirements?

2. What technical personnel are needed?

3. What are the clerical staff requirements?

4. Where can competent staff members be hired?

5. Can staff members be retrained or should specialists be sought?

6. What products and services should be provided "in-house"?

7. Can services be contracted?

8. What are the equipment requirements?

9. What are the sources of equipment and supplies?

SOURCE OF FUNDS

The sources and amounts of federal, state, and local funds should be determined. Persons responsible for planning and establishing an information dissemination system must work closely with administrators responsible for budget preparation and fund accounting. The budget along with the proposed usage of personnel, equipment, and financial resources, should be submitted through regular channels for approval early enough to receive ample consideration and permit readjustment.

BUDGETS

Budget allocations are used as the basis for initiation and continuance of operations. Although there are different methods and different terminology used in formulating budgets, the following outline may be useful as a checklist of items to be considered for inclusion in a budget. This type of budget is known as a "line budget" because each item, including names of personnel in budgeted positions is listed on a separate line under the major headings.

Category	Federal Funds	State Funds	Other Funds
A. Personnel			
Professional			
Clerical-Technical			
Students (part-time)			
Graduate			
Undergraduate			
Consultants			
B. Employee Benefits			
Retirement			
Medical Insurance			
Life Insurance			
C. Travel			
Staff			
Consultants			
Advisory Committee			

Category	Federal Funds	State Funds	Other Funds
D. Supplies and Materials			
Office Supplies			
Information Materials (ERIC microfiche, etc.)			
E. Communications			
Telephone			
Postage			
F. Services			
Duplication			
Training Materials			
Publications			
Data Processing			
Computer Services			
G. Equipment			
H. Other Direct Costs			
I. Subtotal, Direct Costs			
J. Indirect Costs			
K. Total Costs			

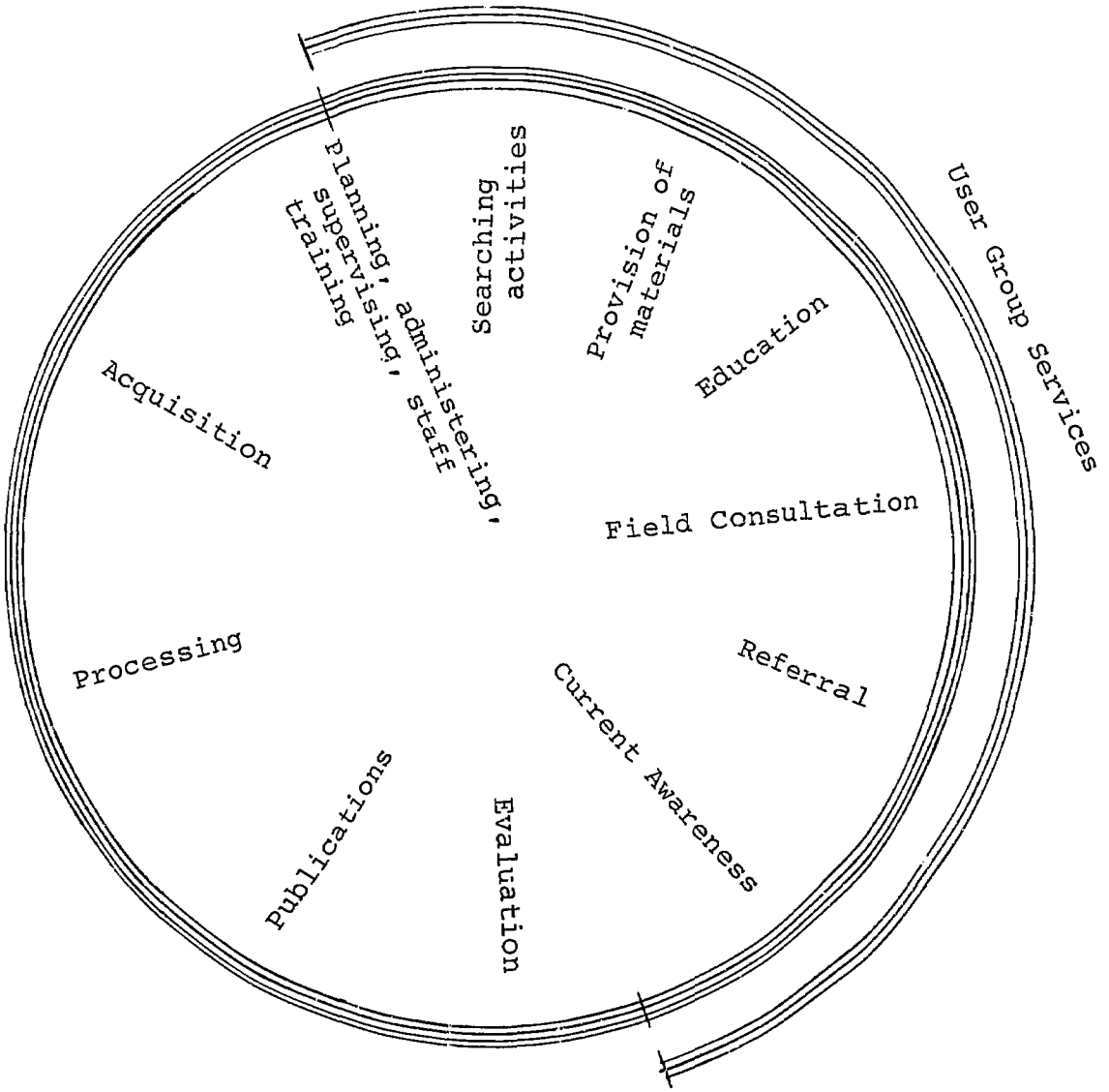
This kind of budget is needed to identify the amount of money required and is the kind of budget generally used to control expenditures.

There is also a need to know what programs and performance are to cost, therefore, there should also be a program or performance budget which reallocates the line budget to programs. The objective is to determine the amount of dollars and percentage of the budget that is required for each major component of the program. Useful in this process is a matrix which facilitates reallocation of the line items to program items. This methodology makes clear the choices which must be made and permits working from line to program or from program to line.

Line Items	Line Total	Program or Performance Categories				
		Acquisition	Administration	Processing	Current Awareness	etc.
Personnel e.g. John Smith	$12,000	$3000 (25%)	$1440 (12%)	$7560 (63%)		
Emp. Benefits						
Travel						
Supplies & Materials						
Communication						
Services						
Equipment						
etc.						
TOTALS						

The elements of the information dissemination program must be identified first in order to know what tasks are going to be performed, what equipment is needed, etc. Full identification of expected allocations of staff time to perform identified tasks, number of trips and average cost per trip, identified prices of furnishings and equipment with correct current costs from one or more identified sources are necessary. For telephone, postage, and similar expenses, it may be more feasible to use an average amount per month.

Program or performance categories can be demonstrated by use of circular or pie charts which illustrate the "trade-offs" necessary with a given allocation. The amount of dollars for each category will determine how large or small each section of the diagram will be. When the program budget is complete, the lines can be drawn on this diagram showing the amount of money and percent of the budget which is needed for each component.



BUDGET/EXPENDITURE REPORTING

After the budget allocations have been approved, it is important to have an accurate posting and reporting system which takes the following into account:

1. Approved budget
2. Personnel appointments, resignations
3. Encumbered commitments for all budget lines
4. Expenditures for all budget items

5. Balance

6. Lapsing funds which are part of the balance and to be reassigned.

If an accurate posting system is maintained, the expenditures can be matched against the budget and the reassignment of funds can be identified. The differences and the reassignments should help in preparing the next budget. Analysis of the cost and effectiveness of chosen alternatives should be carried on in order to develop a basis for subsequent decisions. Effective methods of cost accounting will provide the empirical data for analysis of actual unit costs which may be used for subsequent budget formulation. Benefits from the unit to which a cost has been assigned, may be assessed both objectively and subjectively. Consideration of the cost-benefit may result in effort to improve the relationship. For example, the misplacement of staff effort may result in less-than-efficient operation.

To summarize:

1. Assess available resources.

2. Seek alternative means of achieving cost effectiveness.

3. Seek funding sources and develop resources to achieve desired objectives.

4. Establish budget preparation and cost accounting procedures.

5. Prepare a program and performance budget as well as a line budget.

6. Account for the utilization of all resources.

7. Assign cost figures to units of output.

8. Develop means of improving the financial efficiency of the system.

EVALUATION

Evaluation of an information dissemination system should include the continuous appraisal of the program by the staff, utilizing routine feedback from users. It should also include periodic review by external committees that utilize empirical evidence which has been collected as specific indicators of achievement. Both approaches serve as elements of a self-correcting mechanism which permits both minor and major recycling of the planning process.

In recent years considerable attention has been given to the evaluation of the input/output capabilities of an information retrieval system, particularly to the performance criteria for the retrieval function of the system. Recall and precision have been considered important measures of system retrieval performance. More information about this subject can be found in a publication by Lancaster.[17]

FEEDBACK

Feedback, the phenomenon of receiving cues from users and from data collected within the system, is useful for making improvements in operations, services, and products. When the collection of feedback is routinized, the feedback data can serve as a continuous indicator of the need for routine corrections in the system. Cumulations of data can serve as evidence for periodic review and major corrections. Users should be sensitized to the usefulness of their feedback.

EVALUATION

Evaluation has the connotation of assignment of value which implies the use of measurement in order to assign this value. The definition of, and the relationship between, evaluation and measurement is stated by Green as follows:

> Measurement is concerned with the application of an instrument or instruments to collect data for some specific purpose. Evaluation is the process of subjective appraisal with specific purposes or aims in mind. Most often this appraisal is based on the data or information which has been collected through the measurement process. It is possible, however, to make an evaluation on the basis of very meager data and information, even though such an evaluation would probably be invalid. Evaluation is the more comprehensive of the two terms; it may involve measurement; it always requires personal judgment and thus is subjective. It is the basis on which decision for change may be made. In contrast, measurement always tends to be as objective as the accuracy of the instrument and the skill of the person will permit it to be.[18]

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[17]Wilfried F. Lancaster, *Information Retrieval Systems* (New York, New York: Wiley, 1968).

[18]John A. Green, *Introduction to Measurement and Evaluation* (New York: Dodd, Mead, 1970), p. 4.

In planning for evaluation it is necessary to identify: 1) what is to be evaluated; 2) what key indicators should be measured; 3) how data may be collected; 4) how data can be analyzed, interpreted, and valued; and 5) what use will be made of the results.

Estimation of growth and progress towards objectives is the essence of the evaluation program. Growth and progress can be judged by: 1) the efficiency of the information dissemination system, and 2) users' satisfaction with services and products.

It may be anticipated that an outside review team would be concerned with such factors as:

Focus of the program

Mechanisms for program planning, development and maintenance

Program balance

Program effectiveness

Resources (e.g., adequate financial support, economic efficiency, staff competence).

KEY INDICATORS

Key indicators should be selected for each objective of the information dissemination system. These should indicate the degree to which objectives are being achieved; therefore, the indicators should be measurable and representative. Care should be taken to select key indicators which provide evidence for valuing. Thus, judicious selection of data is mandated.

The first major objective in Chapter III is:

> To acquire appropriate documents, maintain a document bank, and establish access to other relevant materials through cooperative efforts with other agencies.

A few key indicators which would permit valuing of this objective are:

1. Number of documents acquired.
    a. Solicited
    b. Unsolicited
2. Number of documents processed.

3. Number of gift documents discarded.

4. Number of referrals to other agencies.

EVALUATION OF THE EVALUATION PROCEDURES

It may seem unnecessary to evaluate the feedback and evaluation process, but it is necessary to study and improve the process. Whenever it is apparent that feedback is failing to provide the desired evidence, the feedback process should be improved. Likewise, the procedures used by outside teams should be evaluated to determine if changes in procedures for evaluation are warranted. Appropriate questions about the feedback and evaluation process include:

Does the data provide the same evidence over time? (Reliability)

Does the data measure what it purports to measure? (Validity)

Are the judgments made in periodic evaluation based upon valid and reliable empirical evidence?

Are the judgments being made for the right reasons?

Are the judgments being utilized for the improvement of the system?

The cost and benefit of evaluation must be considered. Disruption of regular procedures and expense in conducting evaluation is to be expected, but must be measured against the benefits derived.

Essential points are summarized:

1. Maintain a systematic feedback system.

    a. Identify elements and interrelationships in the system.

    b. Design forms to gather data about the system element and interrelationships.

    c. Use forms to gather data (check validity and reliability of forms).

    d. Compile and analyze data.

    e. Use analysis of data in program planning and budgeting.

f. Use analysis of data in assessing progress and re-directing effort.

2. Plan for feedback from users as one means of evidence for evaluation.

   a. Plan for feedback from the outset.

   b. Sensitize users to the need for feedback.

   c. Develop means of obtaining routine feedback.

3. Plan to use feedback and evaluation techniques which are useful throughout the national information system (ERIC).

   a. Plan and share methods which are useful at different levels.

   b. Cooperate with Central ERIC and VT-ERIC in evaluation and improvement of the total information system.

4. Plan to have periodic evaluation of the system by external review groups.

   a. Plan to include representation from affected groups on the review group (e.g., users, staff, administration).

   b. Plan the general mode by which the evaluation will take place.

   c. Agree upon acceptable evidences or indicators which are to be used in assessing progress.

   d. Develop means of accumulating evidence for the review group.

5. Evaluate the methods of feedback and evaluation being used.

   a. Determine whether methods help to improve the system.

   b. Determine the extent to which methods are disrupting the operations.

   c. Determine the alternative techniques available.

6. Improve the feedback and evaluation system.

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APPENDICES

APPENDIX 1

OBJECTIVES OF THE ERIC CLEARINGHOUSE FOR VOCATIONAL AND TECHNICAL EDUCATION[1]

1. To initiate a pilot study which will result in establishing and operating an information retrieval system for vocational and technical education and related services in affiliation with the ERIC system and to provide additional information retrieval services needed by relevant professional groups, specifically to:

    a. Establish quality control criteria;
    b. Identify materials and sources of material to be included in the system;
    c. Establish a surveillance network;
    d. Make appropriate contacts and acquire materials;
    e. Develop and maintain linkage with ERIC (USOE), the various ERIC centers, and other information retrieval systems;
    f. Identify user groups and their needs and to relate the system to these needs;
    g. Establish appropriate procedures for processing materials;
    h. Develop and refine a vocational education thesaurus;
    i. Index materials and prepare abstracts and bibliographical data using the ERIC resume forms;
    j. Have the material meeting the system's criteria microfiched;
    k. Enter index terms into the optical coincidence system.

2. To disseminate through various channels information on vocational and technical education, specifically to:

    a. Establish a dissemination schedule;
    b. Make available microfiche, abstracts, and other forms of information;
    c. Issue needed publications to selected audiences;
    d. Prepare and publish digests of vocational and technical education research;
    e. Conduct training conferences, seminars, and other appropriate activities to maximize user benefits from the system;
    f. Utilize multiple channels and techniques in information dissemination.

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[1] Formulated in 1966.

3. To conduct research and evaluation activities on the retrieval and dissemination system, specifically to:

   a. Assess the adequacy of information acquisition;
   b. Appraise the effectiveness of the system's quality control procedures;
   c. Conduct cost and system analysis studies;
   d. Continue the study, reappraisal, and refinement of the coordinate indexing system and retrieval procedures;
   e. Examine the intensity and range of requests upon the system by various subpopulations;
   f. Study the effectiveness of linkage and relationship to other information retrieval centers and research and development components;
   g. Determine the relative effectiveness and adequacy of alternative dissemination mechanisms;
   h. Establish a continuing evaluation of the IR system.

CENTRAL ERIC (USOE) OBJECTIVES[2]

1. To guarantee ready access to the world's English-language literature relevant to education. (documentation function)

2. To generate new information products by reviewing, summarizing, and interpreting current information on priority topics. (information analysis function)

3. To infuse information about educational developments, research findings, and outcomes of exemplary programs into educational planning and operations.

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[2]Extrapolated from "All About ERIC," *Journal of Educational Data Processing*, Vol. 7, No. 2 (April, 1970), p. 56.

APPENDIX 2

THE UTILIZATION OF INFORMATION BY STATE SUPERVISORY AND TEACHER EDUCATION PERSONNEL IN VOCATIONAL AND TECHNICAL EDUCATION[1]

SUMMARY, CONCLUSIONS AND IMPLICATIONS, AND RECOMMENDATIONS

SUMMARY

PURPOSE

The central purpose of this study was to investigate factors influencing the utilization of information for problem-solving by state supervisory and teacher education personnel in vocational and technical education.

OBJECTIVES

Objectives essential to the conduct of the study were:

1. To identify differences between teacher educators and state supervisors in vocational and technical education in their utilization of information.

2. To identify relationships between frequency of literature source selection in solving work-related problems and vocational educators' perceived accessibility, ease of use, and technical content of and degree of experience with literature sources.

3. To identify major sources of information used by vocational educators in solving work-related problems.

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[1]J. D. McCracken, "The Utilization of Information by State Supervisory and Teacher Education Personnel in Vocational and Technical Education" (unpublished Ph.D. dissertation, The Ohio State University, 1970), pp. 75-88.

PROCEDURE

The target population for the study consisted of teacher education and state supervisory personnel in vocational and technical education. Seven states were purposively selected to optimize geographic representation and to include states with varying size staffs of teacher educators and state supervisors. All the 148 state supervisors and 141 teacher educators in the seven states were sampled. A mail questionnaire was field tested and revised prior to its utilization. Responses were obtained from 230 of the 289 subjects, which was 80 percent of the sample. Treatment of the data was accomplished through a description of the sample, analysis of data presented in contingency tables, and multiple linear regression. Questionnaire responses were coded and analyzed through use of The Ohio State University Computer Center.

Three major and 16 supporting null and alternative hypotheses were developed to investigate factors influencing the utilization of information for problem-solving by state supervisory and teacher education personnel in vocational and technical education.

FINDINGS

Six of the eight supporting null hypotheses, stated to test for differences in the information sources utilized by teacher education and state supervisory personnel in vocational and technical education, were rejected at the .05 level of significance.

Teacher educators, when compared with state supervisors, were more likely to: 1) use bibliographies, publications lists, theses and dissertations, indexes, and research reviews; 2) conduct their own search for literature; 3) read original research; 4) search for literature outside the building where they worked; 5) utilize literature from educational institutions; and 6) search impersonal sources of information.

State supervisors, when compared to teacher educators, were more likely to: 1) use policy papers and curriculum and teaching guides, 2) have other assist in their search for literature, 3) read summaries and interpretations of research, 4) search for literature within the building where they work, 5) utilize commercial sources of literature, and 6) consult with associates within their organization.

Collectively, teacher educators and state supervisors tended to: 1) utilize journals and periodicals extensively, 2) conduct their own literature search, 3) read summaries and interpretations of research, 4) utilize materials from educational institutions,

5) use a library within their organization, and 6) consult with personal sources in problem resolution.

The groups did not significantly differ as to whether the library generally used was within or outside the organization for which they worked, or in their motivation for conducting literature searches.

The factors of accessibility, ease of use, and degree of experience were positively correlated with frequency of literature source selection in solving a work-related problem. Accessibility appeared to be the most potent independent variable for prediction of literature source utilization. Technical content was negatively correlated with frequency of use. Sources rated high in technical content were perceived to be inaccessible and difficult to use. A significant multiple correlation coefficient (R) of .9860 and a coefficient of determination (R^2) of .9722 between the independent variables and frequency of literature source utilization were obtained. Sources with the greatest utilization in solving current work-related problems were journals, newsletters, and periodicals, and guidebooks, handbooks, and manuals.

None of the four null hypotheses, stated to test for significant differences among literature sources in solving work-related problems, were rejected at the .05 level of significance. In resolving a current work-related problem, literature sources were utilized in the following order of frequency: 1) guidebooks, manuals, handbooks; 2) bibliographies, indexes, catalogs; 3) journals, newsletters, periodicals; 4) research reviews and interpretations; 5) theses, reports, monographs; and 6) books. Approximately three-fourths of the literature searches resulted in information with which the user was satisfied. The stage in problem-solving in which literature was used most was in developing a background and definition of the problem.

CONCLUSIONS AND IMPLICATIONS

The findings of the study were the basis for conclusions and implications having possible significance for researchers, teacher educators, state supervisors, and information specialists in vocational and technical education.

Conclusion 1

Accessibility appears to be the dominant factor influencing frequency of utilization of literature sources.

Implication 1

Information dissemination systems, promoters of educational change, and producers of research must make their products accessible (i.e., readily obtainable) if real impact upon the profession is desired.

Conclusion 2

Teacher educators and state supervisors normally utilize libraries within the institution and building where they work.

Implication 2

Further support is noted for making resource materials readily accessible to teacher educators and state supervisors.

Conclusion 3

Teacher educators and state supervisors tend to read interpretations of research to a greater extent than reports or original research.

Implication 3

Research needs to be repackaged, reviewed, summarized, and interpreted to improve the linkage from knowledge to application.

Conclusion 4

Because guidebooks, manuals, and handbooks are the literature sources utilized to the greatest degree in resolving current work-related problems, it appears that "how to" answers are being sought to a greater extent than "why" answers.

Implication 4

Incorporation of research findings into the main stream of operational procedure would be facilitated by synthesizing the findings for practical application.

Conclusion 5

Materials from educational institutions are utilized to a greater extent than materials from commercial sources.

Implication 5

The educational community has a responsibility to review, repackage, summarize, and interpret information from all sources to leadership personnel in vocational and technical education.

Conclusion 6

Teacher educators utilize research-oriented literature to a greater extent than state supervisors. State supervisors utilize "how to" literature to a greater extent than teacher educators.

Implication 6

Materials should be developed with consideration for characteristics of the target audience.

Conclusion 7

Teacher educators and state supervisors usually conduct their own search for information. In conducting their own search, they can expect to obtain satisfactory information for approximately three-fourths of their current work-related problems.

Implication 7

Educational programs to train user groups to seek out available information are needed, information systems and products must be made more accessible to individual users, and research is required to identify and fill information gaps.

Conclusion 8

Journals and periodicals are utilized to a greater extent by teacher educators and state supervisors in vocational and technical education than in any other single professional literature source.

Implication 8

The current literature source with the potential for reaching the greatest audience of teacher educators and state supervisors is journals and periodicals.

Conclusion 9

The literature sources with which a person is familiar continue to be used in solving current work-related problems.

Implication 9

Educational programs and accessibility to users are required to achieve high utilization of new and different information sources, products, and systems.

Conclusion 10

Personal sources of information are utilized to a greater extent than literature sources.

Implication 10

Conferences, workshops, and other settings which provide opportunity for interaction among heterogeneous groups of participants are useful linkage mechanisms. Participants should fulfill diverse roles in linking research to practice.

Conclusion 11

Literature sources rated high in technical content by vocational educators are perceived to be relatively inaccessible.

Implication 11

It is possible that educators perceive literature with which they are less familiar as being higher in technical content. Improved accessibility of literature believed to be higher in technical content should improve its utilization.

Conclusion 12

Teacher educators and state supervisors tend to utilize literature sources they perceive to be easy to use to a greater extent than those which they perceive to be difficult to use.

Implication 12

Ease of use is an important consideration in the development of information products and systems for vocational education.

Conclusion 13

The same general types of literature sources are used by leadership personnel in vocational and technical education, regardless of their major job problems.

Implication 13

Personnel may not be familiar with or have access to divergent sources of professional literature.

Conclusion 14

Teacher educators and state supervisors having problems related to teaching and learning are less likely to conduct

satisfactory literature searches than those seeking solution to other types of problems.

Implication 14

Fewer answers are available to resolve problems related to teaching and learning; thus, this is an area of needed research emphasis. Users with problems in this area need assistance in seeking and interpreting information which is available.

Conclusion 15

Teacher educators and state supervisors having problems related to research and evaluation are more likely to conduct satisfactory literature searches than those seeking solutions to other types of problems.

Implication 15

Users with problems relating to research and evaluation need less assistance in seeking and interpreting information than those with major problems in other areas.

Conclusion 16

Users tend to use literature sources in the early stages of problem development to a greater extent than in the later stages.

Implication 16

Primary emphasis in review and interpretation papers should be placed on assisting users in developing a background and definition, examining alternatives, and developing solutions for their major work-related problems.

Conclusion 17

A major portion of the variance ($R^2 = .97$) associated with frequency of literature source utilization in resolving current work-related problems may be accounted for by a knowledge of subjects' perceived accessibility, ease of use, and technical content of and degree of experience with the literature sources.

Implication 17

Major factors related to frequency of literature source utilization in resolving current work-related problems have been identified.

RECOMMENDATIONS

The findings and conclusions of the study serve as a basis for the following recommendations.

1. It is recommended that additional emphasis be given to reviewing, summarizing, interpreting, and repackaging the knowledge base for user groups in vocational and technical education.

2. It is recommended that educational programs be developed to train target audiences to search the knowledge base.

3. It is recommended that educational institutions make literature sources readily accessible to teacher educators and state supervisors.

4. It is recommended that conferences, workshops, and other settings which provide for interaction among participants with diverse roles in linking research and practice be given additional emphasis as a mechanism for dissemination of information.

5. It is recommended that "how to" documents be developed for specific applications of information in the knowledge base.

6. It is recommended that information systems and products in vocational and technical education be more fully developed to improve their accessibility and ease of use.

Additional areas of research have been suggested by this study. Some of the more important of these areas are:

1. Research of the same type as this study to identify factors influencing the utilization of information by other target audiences in vocational and technical education.

2. Research to determine the critical information needs of key groups in vocational and technical education.

3. Research, utilizing an experimental design, to determine the more useful information products with various target audiences in vocational and technical education.

4. Research to evaluate educational strategies for improving utilization of the knowledge base by practitioners.

5. Research to more fully test for relationships between the type of problem encountered and information sources utilized by vocational educators.

6. Evaluative studies of information systems and products to provide feedback to those concerned with production and utilization of research.

7. Research for further development and refinement of information dissemination systems.

APPENDIX 3

EXAMPLES OF SEARCH TECHNIQUES

PROBLEM

How is the computer being used to assist students in vocational choice?

Key Words

computer
students
vocational choice

Search plan I

1. Look in Subject Index of current issues of *Research in Education* (Cumulative indexes should be used for retrospective search) under the key words you have selected.

   Example: February 1968 issue of *Research in Education*

   a. Computer, on page 129 - only term is computer assisted instruction.

   b. Students, on page 170 - only report under this term is Education achievement and the Navajo.

   c. Vocational choice, on page 177 - this term is not used; however, the term vocational counseling is displayed. Under this term, three reports are listed:

      1) NEW MODELS AND TECHNIQUES IN CAREER GUIDANCE.
      ED 012 936

      2) PREDICTING A STUDENT'S VOCATIONAL CHOICE.
      ACT-RR-18
      ED 012 941

      3) PROJECT ACCENT-A COOPERATIVE PROGRAM OF SAN BERNARDINO VALLEY COLLEGE AND SURROUNDING HIGH SCHOOLS IN AUTO-MECHANICS, APPLIED ELECTRONICS, AND OFFICE OCCUPATIONS TRAINING IN GRADES 11, 12, 13, AND 14.
      ED 013 074

It appears that the first two titles would be of interest if the computer was utilized in assisting students in vocational choice. The abstracts for these two reports are examined on pages 35-36. The first document reports the development of a computer oriented program which assists students in vocational choice and is relevant to the problem being studied. The second document does not appear as relevant.

Search plan II

1. If no relevant titles had been listed under the three key words, then plan II should be followed.

   a. Use the Rotated Descriptor Display at the end of the *Thesaurus of ERIC Descriptors* and look up the key words, computer, students, and vocational choice. In this section all terms are displayed alphabetically by each word in the descriptor. Thus, the use of a word as a single term or part of a bound term may be determined very quickly. In this example only one term, students, will be checked in order to save time.

   b. In the alphabetical listing, this display is found.

STUDENTS
ABLE STUDENTS
ADULT STUDENTS
ADVANCED STUDENTS
AVERAGE STUDENTS
BILINGUAL STUDENTS
CAUCASIAN STUDENTS
COLLEGE BOUND STUDENTS
COLLEGE STUDENTS
COMMUTING STUDENTS
ELEMENTARY SCHOOL STUDENTS
EXCEPTIONAL STUDENTS
FOREIGN STUDENTS
GRADUATE STUDENTS
HANDICAPPED STUDENTS
→ HIGH SCHOOL STUDENTS
JUNIOR HIGH SCHOOL STUDENTS
LOW ABILITY STUDENTS
LOWER CLASS STUDENTS
MEDICAL STUDENTS
MIDDLE CLASS COLLEGE STUDENTS
NEGRO STUDENTS
NONCOLLEGE PREPARATORY STUDENTS
NONRESIDENT STUDENTS
SECONDARY SCHOOL STUDENTS

SUPERIOR STUDENTS
TALENTED STUDENTS
TERMINAL STUDENTS
TRANSFER STUDENTS

c. In examining this display, the importance of narrowing your search whenever possible to a specific aspect of your problem becomes evident. In this instance you decide that you wish to specifically focus on high school students which would include many different kinds of students such as able students, average students, college bound students, low ability students, etc.

d. The term, high school students, is looked up in the February issue of RIE on page 142. The second item under this term is New Models and Techniques in Career Guidance located on page 35. This report does have the desired information.

e. The Rotated Descriptor Display is a simplified method whereby a single term which is used with a modifier can easily be located without knowing what the modifier is.

e.g. STUDENTS
HIGH SCHOOL STUDENTS

It takes the guesswork out of trying to determine what modifying terms are being used in an index.

Search plan III

1. If no pertinent titles had been found as the result of search plan I and II, then plan III should be followed.

   a. Use the *Thesaurus of ERIC Descriptors* which is a term association list and look up the key words, computer, students, and vocational choice. The terms in the thesaurus are listed alphabetically. In this example only one term, vocational choice, will be checked in order to save time.

   b. In the alphabetical listing, the following terms are listed.

VOCATIONAL AGRICULTURE
VOCATIONAL AGRICULTURE TEACHERS
→ VOCATIONAL COUNSELING
VOCATIONAL DEVELOPMENT

VOCATIONAL DIRECTORS
VOCATIONAL EDUCATION
VOCATIONAL EDUCATION TEACHERS
VOCATIONAL FOLLOWUP
VOCATIONAL HIGH SCHOOL
→VOCATIONAL INTERESTS
VOCATIONAL REHABILITATION
VOCATIONAL RETRAINING
VOCATIONAL SCHOOLS
VOCATIONAL TRAINING CENTERS

c. Obviously the term vocational choice is not in the listing; however, a similar term, vocational interests is there.

d. Examine the display under vocational interests.

VOCATIONAL INTERESTS
BT INTERESTS
RT CAREER CHOICE
OCCUPATIONAL CHOICE
STUDENT SCIENCE INTERESTS
VOCATIONAL COUNSELING[1]
VOCATIONAL DEVELOPMENT
VOCATIONAL EDUCATION

e. BT stands for broad term which means that interests is a broader term than vocational interests.

f. RT stands for related term which means that related but not synonomous concepts are listed here. For the problem being searched, career choice is the descriptor to use instead of vocational choice.

g. Look up the term career choice in the February issue of RIE on page 125. The second item, Predicting a Student's Vocational Choice, under career choice appears to be of interest.

h. Scan other descriptors beginning with career. Under career planning is New Models and Techniques in Career Guidance which might be related to the problem you are investigating.

i. Read abstracts for these two items on pages 35-36.

[1] Vocational counseling has already been checked under Plan I.

You will note that the missing component in these searches is the term, computer. In looking at the resume on page 35, computer assisted programs is one of the descriptors but is not starred. Since the indexes contain only the five major concepts of a report, this term was not used. Eventually the ERIC system will have search capability using these additional terms which will make in-depth searching possible but will also increase the need for understanding the techniques described here.

USE OF THE COORDINATE CONCEPT IN STRUCTURING A SEARCH

a. Write the key words representing the concepts of the problem for which you are seeking information at the top of a sheet.

List the ED numbers of documents which appear to be of interest to you under each term. Add or change terms as you go along. When you finish you will have a list such as the following example (the original concepts are underlined):

CAREER PLANNING	COMPUTER	HIGH SCHOOL STUDENTS	VOCATIONAL CHOICE VOC. COUNSELING
ED 012 936		ED 012 936	ED 012 936
			ED 012 941

b. Report number ED 012 936 is found in three columns. This means that report ED 012 936 is concerned with high school students, career planning, and vocational counseling. Therefore, there is a greater possibility that this report will have more information of interest to you than report ED 012 941 which occurs only once under vocational counseling.

c. If the minor term, computer assisted programs, had also been used in the indexes, report ED 012 936 would have been listed under that term. This report would have shown up under all three concepts representing your problem; hence, it should have a high degree of relevance to your information need.

RECOMMENDATION

When time permits, use all three plans in conducting a search for information.

APPENDIX 4

Procedure Manual for Processing Materials
into the Oklahoma State Library for
Vocational and Technical Education

by
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In consultation with
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The Center for Vocational and Technical Education
The Ohio State University
Columbus, Ohio

June 1970

CONTENTS

INTRODUCTION

Seven states in a cooperative venture with the ERIC Clearinghouse on Vocational and Technical Education initiated a pilot program in July 1969 designed to improve information dissemination for vocational-technical education. This effort is being developed by the Research Coordination Unit for Vocational and Technical Education in these states in such a way that it can relate to the broader state information system for all areas of education. The seven participating states are California, Nevada, Oklahoma, Wisconsin, Pennsylvania, New Jersey, and New York.

Although each state is in a different stage of development and is evolving a program designed to meet the needs of that particular state, a common set of guidelines is being tested. These guidelines were developed by an *Ad Hoc* Committee of Research Coordinating Unit Personnel and the staff of the ERIC Clearinghouse on Vocational and Technical Education. They were issued as *A Guide for a State Vocational-Technical Education Dissemination System, Preliminary Edition, 1969.*

The Oklahoma State Department of Vocational and Technical Education has initiated an information center in which general reference materials, curriculum and curriculum-related materials, research and research-related materials in the field of education are serviced. Within the department, the Research Coordination Unit, and the Curriculum and Instructional Materials Center have cooperated to initiate this center which is designated as The State Library for Vocational and Technical Education. The professional heads of these two units devote part time to this activity, one professional librarian is half time, and there is one full time equivalent (FTE) clerk-typist. In addition to a number of other kinds of activities delegated to their units, the two professional unit heads are involved with selection and acquisition of desired materials, and user assistance involving materials needed for the work of the user. The primary functions of the librarian are processing materials, supervision of FTE clerk-typist, user assistance, and some selection activity. Devices for the education of users in "how to exploit the system for their own needs" are being evolved. It is anticipated that there will be involvement with information analysis activities being encouraged by ERIC.

Primary emphasis is on user service which is accomplished by utilizing existing resources with minimum effort and time devoted to processing and maintaining collections of materials. ERIC (Educational Resources Information Center USOE) publications and indexes with particular emphasis on RIE (*Research in Education*), AIM (*Abstracts of Instructional Materials in Vocational and Technical Education*), ARM (*Abstracts of Research and Related Materials in Vocational and Technical Education*), Manpower Inventory, and

PACE (*Projects to Advance Creativity in Education*) abstracts are utilized. Research, curriculum and instructional materials (generally received on a complimentary basis) that are useful to this state, and those generated within the state, are maintained in the library collection. Other reports generated in Oklahoma and a few general reference materials are included. Access to journal literature is through CIJE (*Current Index to Journals in Education*). A few journal titles of special interest to the staff of the State Department of Vocational-Technical Education are maintained. Some of these are indexed in CIJE. Cooperation in the use of the ERIC microfiche collection located in the University of Oklahoma library has been arranged as well as use of the journal collection.

Two time consuming activities, classification of materials and indexing for retrieval of these materials, have been reduced to a minimum so that time and resources usually spent on this activity can be spent on user services. Classification of materials for shelving or browsing purposes is not conducted. Shelving is accomplished by use of ERIC accession numbers (ED, MP, VT) for hard copies of materials in the ERIC system; and by use of an OK (Oklahoma) accession number for all other hard copies. Access to materials by subject and the need to browse through titles on a particular subject is accomplished through use of ERIC indexes, ERIC abstracts, and the card catalog. Browsing by user groups is effected by pulling materials for a specified date and place of use according to predetermined interests of the group.

A card catalog is maintained for hard copies of materials in this library. The collection numbers approximately two thousand titles with an acquisition rate of approximately six hundred titles per year. Access to the ERIC microfiche collection and the journal collection of the University of Oklahoma library through the subject indexes of ERIC is a key factor in maintaining a small hard copy collection. Access to the hard copy collection, which consists primarily of items not in ERIC system, is through a title file with KWIC'd titles, a classification (USOE) file for curriculum and instructional materials, and an accession file for a unique identification and shelving number.

This manual consists of the procedures for processing hard copies into this collection. The KWIC (key word in context) procedure is used as a substitute for subject indexing and as a means for retrieval of this material. Additional terms are added for ambiguous titles. This is known as KWOC (key word out of context). Using these procedures eliminates professional time for indexing and provides a limited but reasonably satisfactory subject access through the key words. If professional personnel trained in ERIC coordinate indexing is available on a continuing basis, it might be desirable to index materials not in ERIC and not scheduled for ERIC using the ERIC thesaurus. In addition,

a classed file is maintained for instructional materials utilizing the scheme in *Standard Terminology for Instruction in Local and State School Systems*, issued by USOE.

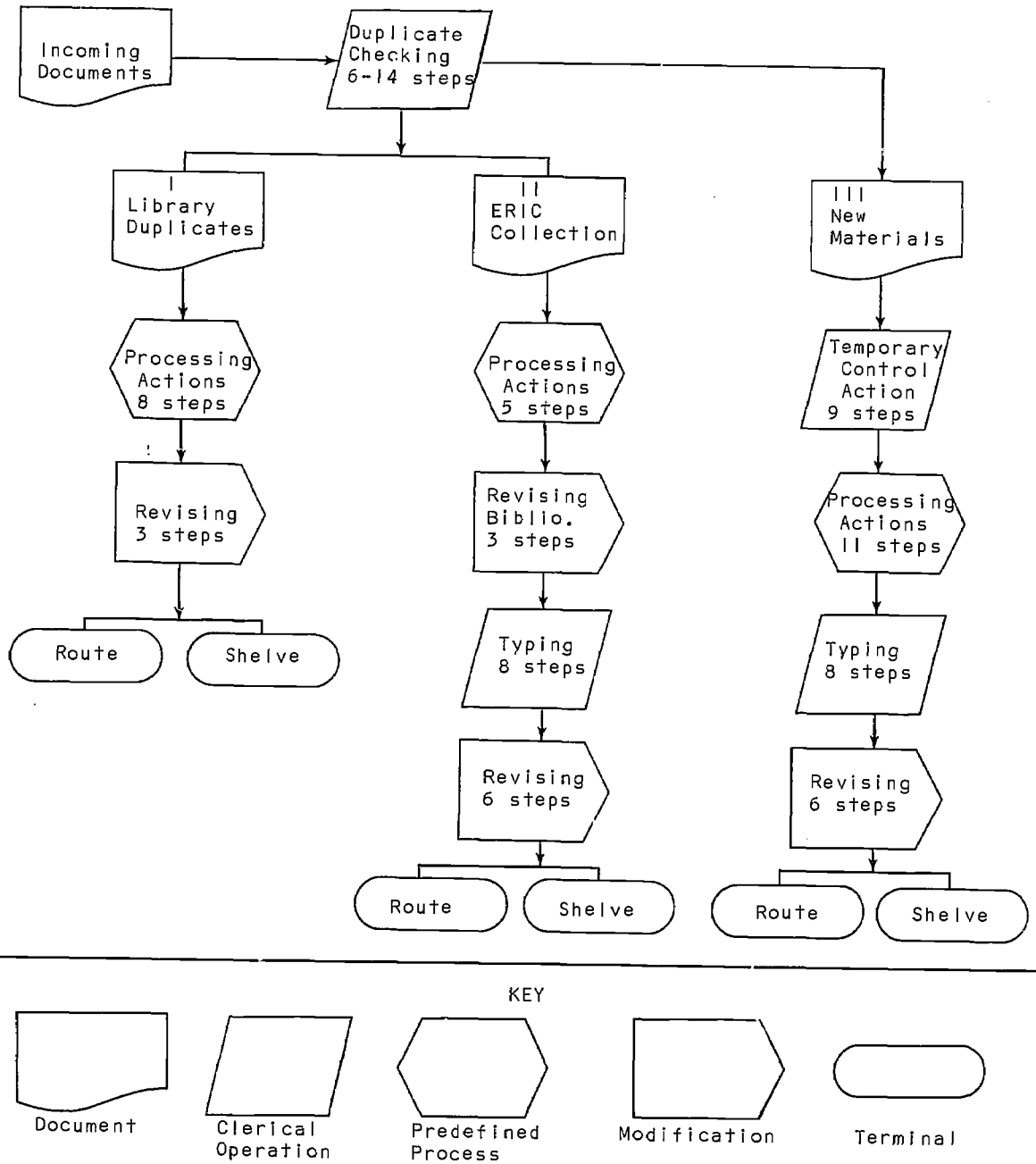
In many instances vocational-technical education personnel in the state departments of education receive vocational-technical materials on a complimentary basis as soon as they are published. Simultaneously these documents are usually sent to ERIC. Citing items in the ERIC system takes from one month to six months. Three months turn-around time is the usual amount of time before an item appears in *Research in Education*. During this period there is need for simplified bibliographic control and access to these materials until they are indexed and cited in the ERIC abstract publications and computer tapes. The simplified system described in this manual is one of the least expensive methods to accomplish this objective. Since ERIC does not use the KWIC method as access to materials, this kind of file, which is part of this procedure, serves as a subject index until materials are in ERIC indexes and then becomes a supplementary access device.

The following flow chart of the procedures outlined in this manual points up the number of steps involved in a very simplified processing program.

One alternative to this manual system is use of the computer. Economic feasibility is a primary factor in this consideration. Some of the important costs which must be investigated are: 1) Developmental costs of computer programming for materials not in ERIC collection and a software package for retrieval; 2) Continuing professional staff time to index materials not in ERIC collection, utilizing the ERIC Thesaurus as the language authority; 3) Availability of computer for short turn-around retrieval time; and 4) Continuing professional staff time to translate user needs into search language which minimizes use of computer and which zeros in on materials appropriate to the problem.

It is recommended that experience with computer tapes be initiated by utilizing the ERIC tapes as soon as staff time and computer time is available. The cost of the ERIC tapes and installation of software is very small. Staff time to structure searches or train others to structure searches, and the computer print-out time or display time on consoles constitute the high cost factors.

DOCUMENT PROCESSING FLOW CHART



SECTION I

Simplified Processing Scheme
Duplicates

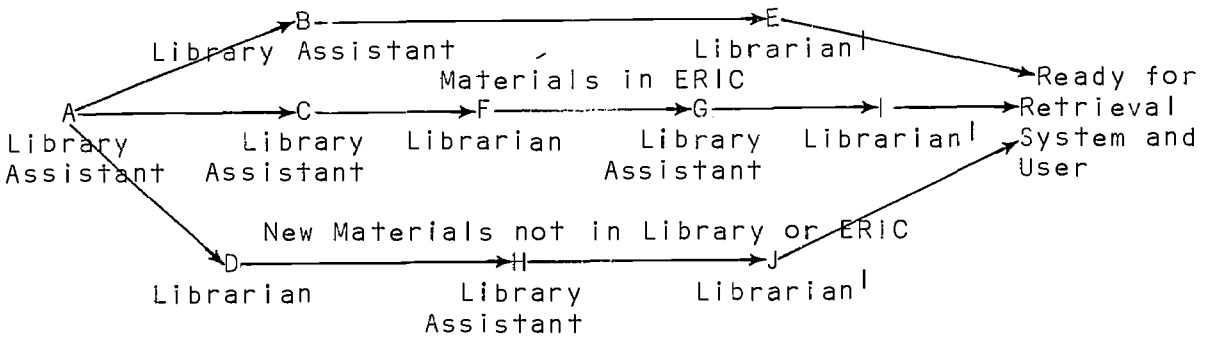


FIGURE I

This figure is further explicated by the breakdown shown below which identifies the code, personnel, and location of their work. In this instance the term, shelf, is used since this is the recommended specific location used with this manual. (File cabinet, room name or number, etc. could be used.) Procedures are outlined in Section II for the activities which occur at these major points in the flow. This scheme has been developed so that the same library assistant, or a different library assistant, could be trained to perform the tasks under A, or B, or C, or G, or H since the tasks under each major activity at these locations are outlined as a unit. The same is true for the activities of the librarian.

Code	Personnel	Location
A	Library Assistant	Duplicate Checking Shelf
B	Library Assistant	Processing Shelf-Duplicates of Materials in Library Collection
C	Library Assistant	Processing Shelf-Materials in ERIC Collections

[1]The personnel at this stage could be changed to library assistant and the location name of Proofing Shelf used rather than Revising Shelf. The library assistant would have to be alert to deviations from established procedures which would be referred to the librarian for decision and direction. A library assistant with appropriate experience and training could perform the proofing. Under these circumstances, procedures would be sufficiently routinized with the library assistant trained to refer problems to the librarian.

Code	Personnel	Location
D	Librarian	Processing Shelf-New Materials (Not in library or ERIC Collections)
E	Librarian[1]	Revising shelf - Duplicates
F	Librarian	Revising shelf - Bibliographic Set-up
G	Library Assistant	Typing shelf - Materials in ERIC Collection
H	Library Assistant	Typing shelf - New Materials
I	Librarian[1]	Revising shelf - Materials in ERIC Collection
J	Librarian[1]	Revising shelf - New Materials

SECTION II
PROCEDURES

Duties performed by: The procedures outlined in this section follow the flow chart in Section I. A work form accompanies each item through all of the steps until an item is ready for the retrieval system and user. Example of work form is included as Example A. It is to be consulted in conjunction with these procedures.

Library Assistant

A. Duplicate Checking

All incoming items are to be placed on shelves marked, Duplicate Checking.

1. The work form sheet is placed inside each piece of material and dated with current date.

2. Next, each incoming item is checked for existence of duplicate copies in present collection by checking the Temporary Control File and the library Title File.

   a. If a copy is a duplicate, the ☐ yes box should be checked on the work form and the temporary control number, ED, VT, MP, or OK number recorded on the work form. This number is called an accession number and is used for identification of the document and for shelving the document.

      1) To identify duplication, the information found in the document must be the same as found on the catalog card in the library Title File. If an incoming item is found in the Temporary Control File, the copy already being processed must be found and the following information must be identical on both copies; title page, edition, date, and paging. If identical, add cop. 1 and cop. 2 to the control slip, add cop. 2 under control number on document and work form. Band the two copies together for further processing. Refile control slip.

      2) Questionable items must be checked with librarian.

3) Duplicate items found in Title File are placed on shelf labeled, Processing Shelf-Duplicates of Materials in Library Collection.

b. If no listing is found, the ☐ no box should be checked. Continue with procedure A-4.

3. Items not found in the library Temporary Control File, or Title File are then checked for duplication in ERIC indexes for *Research in Education* (RIE), *Abstracts of Instructional Materials in Vocational and Technical Education* (AIM), *Abstracts of Research and Related Materials in Vocational and Technical Education* (ARM), and *Manpower Inventory* (MP).

a. The following points should be noted in using the indexes.

1) Use annual indexes for previous years, and monthly issues for current year.

2) Indexes for AIM and ARM are in one publication.

3) Manpower is published as an annual volume.

4) Check RIE first, then AIM and ARM, then MP.

5) Check date of publication of book or document. Do not check indexes that were printed before the item was published. A reprint date is not the first publication date.

6) Item is checked by author. There are separate sections in indexes for personal author, e.g., Jones, Samuel; and corporate author, e.g., Oklahoma State Board for Vocational Education, Stillwater. Check personal author first. If not found, check corporate author (i.e., the name of the institution). On a title page, a corporate name usually has the largest unit of the name last, e.g., State Board for

Vocational Education, Stillwater, Oklahoma. In an author index, the largest unit of the name is first, e.g., Oklahoma State Board for Vocational Education, Stillwater; therefore, check under the largest unit of the name.

7) When a search through cumulative indexes and monthly indexes is complete, write the date of the latest issue of RIE, AIM, ARM, and/or MP on work form.

Example:

Cumulative Indexes	Checked through
RIE	March 1970

8) If the item is listed in an index, record the accession number in the appropriate place on work form.

Example:

Accession Number	Date of Publication	Page Number In Publication
ED_____	_____	_____
VT_____	_____	_____

9) Use a VT number only when there is no ED number and there is no indication that the item will be published in RIE.

b. Place materials for which accession numbers have been found on shelf labeled, Processing Shelf - Materials in ERIC Collection.

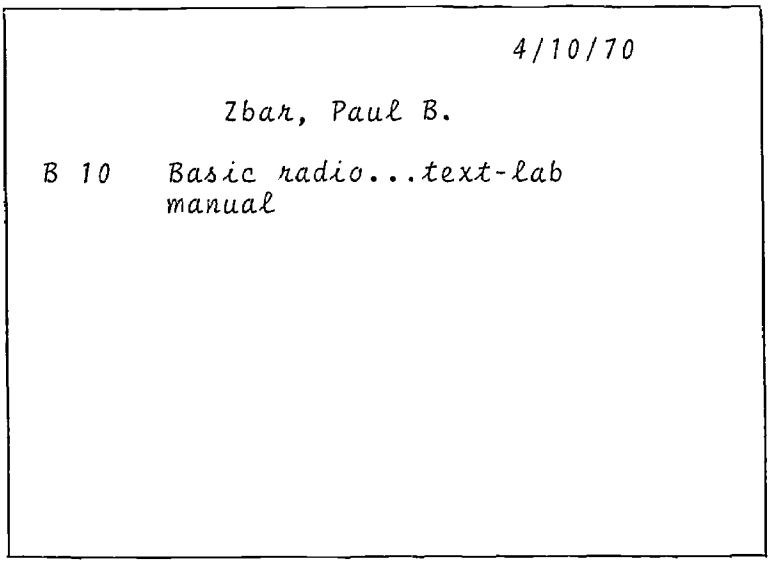
c. If no listing is found, the ☐ not listed box should be checked. Continue with procedure A-4.

4. Fill out a temporary control slip (3x5) which has one carbon.

a. Write first two or three words of title and last two or three words of title with three dots in between e.g., Basic radio...text-lab manual. Add personal author or editor, or institutional author if title page does not indicate an author or editor.

b. Date slip in upper right hand corner with current date.

c. Assign a temporary control number by using the first letter of the first word (except the, a, or an) and by adding the next unused number in Temporary Control File. Always use format and spacing shown on following example.



In this example, this document is the tenth item to be processed with a title beginning with the letter B. Do not try to keep titles in alphabetical order. The files are small enough that this is not necessary. When item is completely processed, slips are pulled and thrown away.

d. Print control number in pencil on slip, lower left hand corner of document, and work form.

e. If two copies are being processed at the same time, add copy numbers to control slip in a column under the control number. Add cop. 1 under control number on one document and its work form, add cop. 2 under control number on second document and its work form.

f. If there is only one copy of a document, a copy number is not used on control slip, work form, or document.

g. File original slip immediately in Temporary Control File by control number.

h. File carbon slip alphabetically by author in Temporary Author Control File.

1) When each issue of RIE is received, the author and institution index is checked against the Temporary Author Control File to determine whether any of the items in this file have ED numbers. If so, the document is located and follows the procedure under a-c.

i. Stamp cover and/or title page with library identification stamp.

j. Materials are placed on shelf labeled, Processing Shelf - New Materials (not in library or ERIC Collections).

k. Newly received materials must be processed at least this far on day of arrival unless there is an exceptionally large number.

B. Processing - Duplicates of Materials in Library Collection

Take several items through step 2, take the same group through step 3, then 4, then step 5, then step 6.

1. Using accession number on work form, pull the accession card with same number from library Accession Card File replacing the card with a temporary blue card filled out as shown below.

ACCESSION NUMBER	DATE	PERSON TAKING	TITLE
8556	10-15-69	BS	The Dynamics of

2. If item is a second copy, print copy 1 and then below, copy 2 on accession card.

Example:

ED 027 419 Summer institute to train data processing teachers for the new Oklahoma statewide computer science system, phase II. Final report. 29 Jan 69. 37p.

cop 1
cop 2

I. Tuttle, Francis
II. Oklahoma State Board for Vocational Education, Stillwater. Div. of Technical Education.
III. Title: Institute to train...
IV. Train data processing teachers...
V. Data processing...
VI. Teach- er for the new...
VII. Okla- homa statewide computer...
VIII. Computer science system...

3. Stamp corner and/or title page with library identification stamp. Print accession number on spine for hard back materials, on lower left hand corner for paper materials. Always use same position, spacing, type and size of numbers and letters. Temporary control number is left in pencil above the accession number until revision is complete at end of processing. Under accession number, print copy 2.

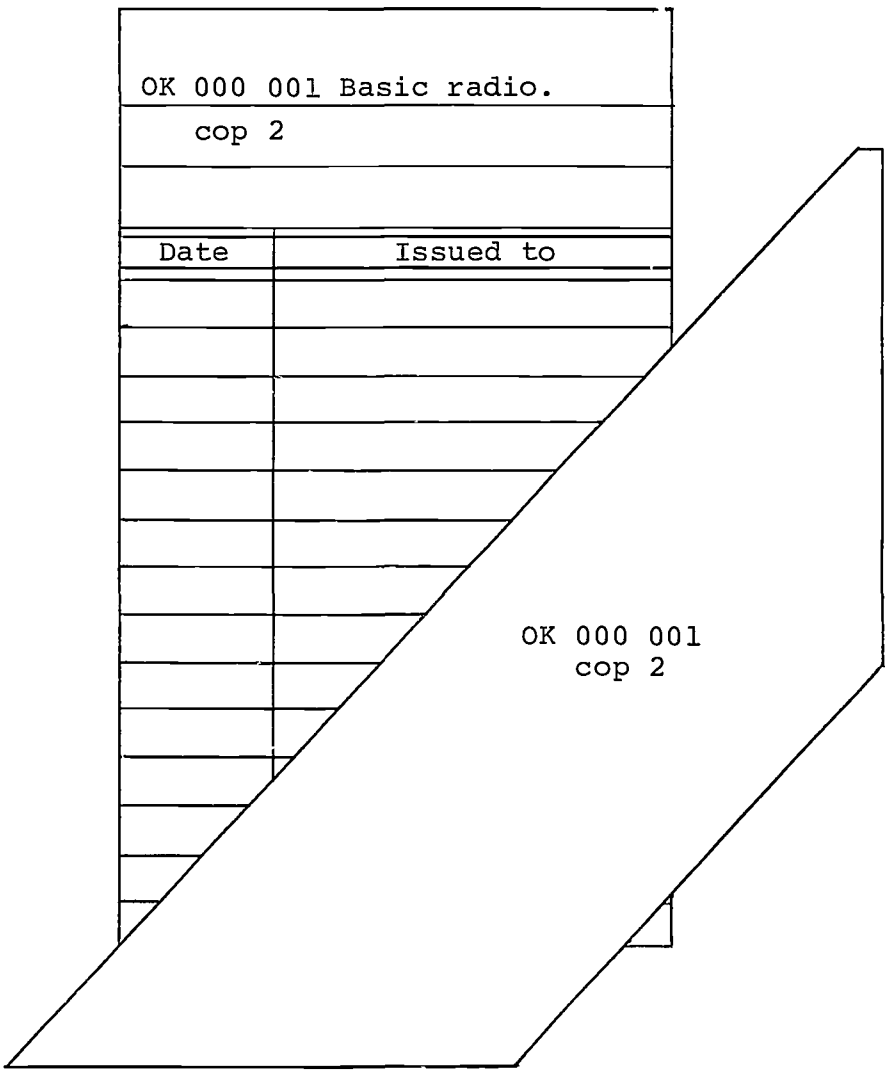
Example:

B10
OK 000 001
cop 2

4. If needed, type book cards and book card band for items that are second copies.[2]

[2]Some systems do not type book cards, and do not provide book bands or pockets, but require the user to fill out the book card. Book cards are not used in the Oklahoma Library since use of materials is primarily "in-house."

Example:



5. Paste book card band on reverse of back cover unless there is printing, then on unprinted last page.

6. Place materials on Revising Shelf - Duplicates.

7. If item is a third (fourth, etc.) copy, print cop. 3 (cop. 4, etc.) below cop. 2 on accession card, cross out duplicate and write triplicate on work form, and place document with work form and accession card on Revising Shelf - Duplicates for librarian to determine nature of further processing.

Library Assistant

C. Processing - Materials in ERIC Collections

1. Using the accession number and date of publication on work form, locate abstract of the document in appropriate ERIC publication. Perform this step for several documents. See Example B for example of title page; Example C for example of abstract.

2. Xerox the abstracts.

3. The purpose of this step is a) to determine whether the document in hand is the same as the one abstracted; b) if it is the same, to code the bibliographic information in the correct sequence for a typist to type a master catalog card to be duplicated. In this instance a simplified catalog card will utilize a title entry with date of publication, paging, USOE classification number for instructional materials, and accession number. Tracings for personal author, corporate author, key words in title, and USOE classification number will be added in this unit card. The procedure follows.

   a. The following information on the title page of the document and the bibliographic information accompanying the abstract must be the same:

      title

      personal author[3]

      corporate author[4] (i.e., institutional name)

      publication date

      edition statement if document has one

   b. Number of pages in the document will be approximately the same since the ERIC system counts all printed pages including covers.

---

[3]The location of the author line in an ERIC resume has changed during the first years of publication.

[4]*Ibid.*

c. Under Section C-D on work form, use the number for title and write number beside title on abstract. Do this for Numbers 1 - 4, 6 - 7. See Example C. See also Example D. For items in ERIC collection, it is only necessary to make one title card. Additional cards utilizing KWIC titles are optional since the ERIC indexes provide access by subject.

4. If a xerox machine is not available, use following procedure.

   a. The following information on the title page of the document and the bibliographic information accompanying the abstract must be the same:

      title

      personal author

      corporate author (i.e., institutional name)

      publication date

      edition statement if document has one

   b. Number of pages in the document will be approximately the same since the ERIC system counts all printed pages including covers.

   c. If item is questionable, check with librarian.

   d. If item is verified, record following information on title page using numbers as appear on work form: 1) title, 3) date, 4) pages, 6) author, 7) corporate author. See Example E.

   e. Mark beginning and end of title with a small line. Minor changes to title can be printed in pencil on title page; otherwise they should be printed on work form in appropriate place.

5. Place materials with work form and abstract in each document on shelf marked Revising Shelf - Bibliographic Set-Up.

Librarian D. Processing - New Materials (not in library or ERIC Collections)

1. In Section C-D Processing of work form, the bibliographic information to be used on a catalog card is itemized and each item has a number. Place appropriate number in pencil beside each item on title page of book or document. See Examples A and E.

2. Mark beginning and end of title with a small line.

3. Minor changes that are needed for typist can be printed in pencil on title page; otherwise they should be printed on work form in appropriate place.

4. If date of publication or edition is not on title page, add in pencil to bottom corner of title page. Use n.d. for no date if a date cannot be found in the introductory pages prior to the first chapter.

5. Use last numbered page plus additional printed pages and add in pencil to bottom corner of title page.

   Example: 36p.+16

   If several sections are separately paged, add all printed pages and use the total number in brackets, e.g. [292] p.

6. For instructional materials used in the classroom, determine the USOE classification number using *Standard Terminology for Instruction in Local and State School Systems*, issued by USOE.

   Add number and classification term to work form.

   Example: (17.1503 Radio)

7. Check personal author and corporate author against authority list. Mark correct form on title page unless extensive difference needs to be written on work form.

   a. Add ed. for editor, or comp. for compiler after personal name if title page indicates this information.

8. Place check above the words in title that are to be typed as a rotated title on a catalog card. See Example E.

9. Indicate cross reference information on work form.

10. Determine number of cards needed for Title File (including KWIC and KWOC terms), Author File, Accession File. Write number on work form. Pencil number on bottom of title page. In the example shown as Example D, eight cards are needed as follows: title card 1, accession card 1, author card 1, KWIC titles 5.

11. Place materials on shelf labeled, Typing - New Materials.

Librarian E. Revising - Duplicates

1. Check bibliographic information on accession card against document to be sure that library assistant has identified a duplicate.

2. Check addition of correct accession number and copy number to accession card, work form, document, book card and card holder.

3. If an item is a third copy, determine a) whether item is used sufficiently to merit a third copy in collection, b) whether item should be given to another library or agency as a gift.[5] If there is a decision to retain, it is recorded on work form and item placed back on Processing Shelf - Duplicates of Materials in Library Collection. If sent as a gift, print, "Gift to (name of place and date)" on accession slip after copy 3. Attach a form letter and give to library assistant for addressing and mailing.

Librarian F. Revising - Bibliographic Set-Up

1. Check for accuracy and completeness of items 1 - 4, 6 - 8 on work forms, Section C-D Processing, performed by library assistant.

---

[5]The Oklahoma library files excess copies by title and uses them for "giveaway" copies when there is a request for that title.

2. For instructional materials used in the classroom, determine the USOE classification number using *Standard Terminology for Instruction in Local and State School Systems*, issued by USOE.

   Add number and classification term to work form.

   Example: (1.0000 Agriculture)

3. Place materials on shelf marked, Typing Shelf - Materials in ERIC Collection.

Library Assistant

G. Typing - Materials in ERIC Collections

1. General typing rules for catalog cards

   a. Indentions

      1) "First indention" 13 spaces from left edge of card.

      2) "Second indention" 16 spaces from left edge of card.

   b. Typing

      1) No strikeovers.

      2) Correct single errors carefully, several errors--start over.

   c. Spacing

      1) Title--three spaces down from top edge of card, first indention.

      2) Call no.--three spaces down from top edge of card, second space from left edge of card.

      3) Pagination--second indention. If space is needed for tracing, pagination follows date.

      4) OE Classification No. and description--three spaces following pagination in ( ).

      5) Tracing--space below pagination line, first indention, type in paragraph form.

6) Two spaces after periods and colons, except in tracings.

7) One space after works or names, commas, semicolons.

8) Added entries--first space, second indention.

d. Capitalization

1) In general follow practices of the English language - capitalize proper names and works derived from proper names, title of persons, historic events, first word of a sentence.

2) In a title, only first word should be capitalized except proper names. If the title begins with article, capitalize following word also.

2. Information to be typed for catalog card is on xeroxed page of abstract, or on title page of document. See Example C. Accession number is obtained from work form. Information is to be typed in the sequence marked on this page on a multilith or mimeograph master. See Example D. The numbered items on the work form are used to sequence the information on the ERIC resume or title page which is to be typed on a catalog card master.

3. Proof and run stencil, or tear apart multiple slips or cards.

4. Type added entries on additional cards. See Example F.

5. If needed, type book card and card band. Paste band inside back cover.

6. Place cards, etc. in document and place document on shelf marked, Revising Shelf - Materials in ERIC Collection.

Library Assistant

H. Typing - New Materials (not in library or ERIC Collections)

1. Check last accession number used. Using accession machine, accession next number on

lower left hand corner of document, (book card, and card holder if used) and on work form. (Several items should be done as a unit of work.) Print number of accession machine is not available. Record last number used each time accessioning is completed. Do not record each title in an accession record.

2. Follow typing rules under G 1.

3. Information to be typed on catalog card is found on title page of document or book. See Example E for example. Check work form for accession number and any further information in Section, C-D Processing which is to be used.

4. Type information in sequence as numbered, on multilith or mimeo stencil, or use magnetic card selectric typewriter.

   Example:

OK 000 001 Basic radio: theory and servicing, a text-lab manual.
1969.
183 p. (17.1503 radio)

I. Zbar, Paul B.
II. Title: Radio, Basic

5. If needed, paste band in back of book. This should be done for several items.

6. Print accession number on lower left hand corner of document, on spine for books and large documents.

7. If stencils are used, proof and run for several items.

8. Type added entries on additional cards. See Example G.

9. Place document, with work form, title page, catalog cards on Revising Shelf - New Materials.

Librarian I. Revising - Materials in ERIC Collection

1. Check unit card for accuracy and completeness of information.

2. Check added entry lines on additional cards for accuracy and completeness.

3. Check accession number on book and book card.

4. Check subjects and title against user request file.

5. Send book to user if appropriate, or place on a shelf to be shelved.

6. Put cards in appropriately labeled filing boxes for filer to file, and work form to be filed. Filer should pull control number slip and destroy if a control number is shown on work form. See Example H for an outline of files and filing.

Librarian J. Revising - New Materials

Follow steps 1 - 6 under Section I.

EXAMPLE A

State Library for Vocational and Technical Education
Stillwater, Oklahoma 74074

MATERIALS WORK FORM

Accession Number: _____ Date Rec'd: _____

A. Duplicate Checking:

Title File ☐ Yes Duplicate of ED_____ Duplicate of MP_____

VT_____ OK_____

☐ No

Cumulative Indexes	Checked through	Accession Number	Date of Publication	Page No. in Publication
RIE	_____	ED_____	_____	_____
AIM	_____	VT_____	_____	_____
ARM	_____	VT_____	_____	_____
MP	_____	MP_____	_____	_____

☐ Not listed Date and Initials_____

Temporary Control Number___ _____

B. Processing - Duplicates of Materials in Library Date and Initials_____ Collection (See Procedure Manual)

C. - D. Processing

1. Title:
2. Edition:
3. Date:
4. Pages:
5. OE Classification:

6. Personal Author:

7. Corp. Author:

8. KWIC and KWOC terms:

9. Cross References:

10. Cards to be made:

Date and Initials_____

E. Revising - Duplicates
(See Procedure Manual) Date and Initials_____

F. Revising - Bibliographic Set-Up
(See Procedure Manual) Date and Initials_____

G. Typing - Materials in ERIC Collection
(See Procedure Manual) Date and Initials_____

H. Typing - New Materials
(See Procedure Manual) Date and Initials_____

I. Revising - Materials in ERIC Collection
(See Procedure Manual) Date and Initials_____

J. Revising - New Materials
(See Procedure Manual) Date and Initials_____

EXAMPLE B

FINAL REPORT

Project Number 7-0822
Grant Number OEG 1-7-070822-3486

SUMMER INSTITUTE TO TRAIN DATA PROCESSING TEACHERS FOR THE NEW OKLAHOMA STATEWIDE COMPUTER SCIENCE SYSTEM, PHASE II

Francis Tuttle
Francis Tuttle, Ed.D., State Director
Vocational Education
and
Project Director
Oklahoma State Board for Vocational Education
Division of Technical Education
Stillwater, Oklahoma

January 29, 1969

The research reported herein was performed pursuant to a grant with the Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

FXAMPLE C

Note—261p.
EDRS Price MF-$1.00 HC-$13.15
Descriptors—Administrator Attitudes, Career Choice, Comparative Analysis, *Comprehensive Programs, Counselor Attitudes, *Curriculum, Edueational Environment, Employment Patterns, *Post Secondary Education, Questionnaires, *Secondary Education, Surveys, Teacher Attitudes, Teacher Background, Teacher Characteristics, Teacher Qualifications, *Teacher Role, Teachers, Vocational Education, Vocational Education Teachers, Vocational Schools

To compare the backgrounds, training, and degree of satisfaction with teaching of secondary and post-secondary academic and vocational teachers, and to obtain the opinions of the teachers and their colleagues in administration and guidance about some important educational issues, a stratified random sample was selected of 180 of the larger public school districts. A post-secondary institution was paired with each secondary school selected, resulting in a sample of 11,649 administrators, counselors, and teachers. Some major findings were: (1) Vocational teachers worked longer hours with fewer students than academic teachers, (2) Changes recommended by teachers were a broad, general education in the high school, a narrower focus on job-related studies in the post-secondary vocational and technical programs, and greater emphasis on mathematics and humanities in the junior college transfer programs, (3) A majority favored more intensive vocational guidance and training in junior high school and more part-time student employment, (4) most teachers recommended a single post-secondary institution embracing both academic and vocational programs, and (5) most respondents felt a combination high school program was feasible for all students if unnecessary requirements were eliminated. (DM)

ED 027 415 VT 007 854
Fliegel, Frederick C.
The Low-Income Farmer in a Changing Society.
Pennsylvania State Univ., University Park. Agricultural Experiment Station.
Report No—Bull-731
Pub Date Mar 66
Note—39p.
EDRS Price MF-$0.25 HC-$2.05
Descriptors—Aspiration, *Farmers, *Individual Characteristics, Job Satisfaction, *Low Income, *Persistence, Social Change, *Socioeconomic Status, Theories
Identifiers—Fayette County, Pennsylvania

To identify some major differences among low-income farmers, and delineate that group representing the real core of the persistently poor, data were obtained from 189 farm operators representing a stratified random sample in Fayette County, Pennsylvania in 1957. The five main categories of individuals identified were: (1) the aged, (2) the physically handicapped, (3) the farm operator primarily oriented to non-farm opportunities, (4) the farm operator oriented to commercial agriculture, and (5) the farm operator oriented to subsistence agriculture. The characteristics of the core of low-income subsistence farmers who normally do not respond to either welfare or economic development efforts were examined in greater detail. It was found that they (1) retained traditional values while having lost many traditional subsistence skills, (2) failed to respond to greater agricultural efficiency and productivity efforts because commercial success was not highly valued, (3) placed extreme emphasis on neighborliness and friendliness as their primary goals, and (4) must respond to an attempt to change prestige orientation if their cycle of poverty is to be broken. (DM)

ED 027 416 VT 007 870
Part-Time Industrial Cooperative Education. A Manual for Administrators and Coordinators, Series B Bull. 198.
Illinois State Board of Vocational Education and Rehabilitation, Springfield. Vocational and Technical Education Div.
Pub Date Oct 68
Note—165p.
EDRS Price MF-$0.75 HC-$8.35
Descriptors—Administrator Responsibility, Admission Criteria, Advisory Committees, *Cooperative Education, Instructor Coordinators, Program Evaluation, *Program Guides, Public Relations, *Secondary Education, *State Standards, Student Placement, Teacher Responsibility, *Trade and Industrial Education, Youth Clubs
Identifiers—Illinois

The manual is intended to assist school administrators and teacher coordinators in establishing and maintaining programs of industrial cooperative education, that is, programs of vocational education designed to provide high school youth opportunities to receive on-the-job training in an occupation which is trade and industrial in nature, of his or her choice, by cooperatively utilizing the resources of the school and community. This 1968 revised edition presents the basic philosophy, activities, methods, and operational procedures of industrial cooperative education programs. The topical areas include: (1) Establishing an Industrial Cooperative Education Program, (2) The High School Administrator's Responsibilities, (3) The Teacher-Coordinator, (4) The Teacher-Coordinator Begins His Work, (5) Selection and Placement of Student Learners, (6) Related Instruction, Coordination, Reports and Records, (7) Advisory Committees: Their Organization and Function, (8) Program Evaluation in Industrial Cooperative Education, and (9) Aids for the Teacher-Coordinator. (CH)

ED 027 417 VT 007 871
Criteria for Technician Education. A Suggested Guide.
Office of Education (DHEW), Washington, D.C.
Pub Date 68
Contract—OE-80056
Note—91p.
Available from—Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (FS5.280:80056, $.45).
EDRS Price MF-$0.50 HC-$4.65
Descriptors—Administrative Organization, Admission Criteria, Curriculum, Educational Facilities, Guidelines, Instructional Staff, *Program Administration, Program Content, *Program Design, *Program Development, Program Evaluation, *Program Guides, Student Personnel Services, *Technical Education

This publication discusses criteria for post-secondary education of technicians as illustrated by the accumulated experience of successful programs which have had their graduates sought after by employees. Chapter headings are (1) Technicians: Who They Are and What They Do, (2) Administration of Programs to Educate Technicians, (3) Physical Facilities, (4) Faculty, (5) Student Selection and Services, and (6) The Curriculum. The objective of such programs is to provide a broadly based competency in a field of applied sciences of sufficient depth that the graduate may be employed in one of a cluster of related work opportunities. They have no predetermined implications for transferability to a baccalaureate or professional programs, but do not preclude a student's continuation toward such an objective. Courses in a technician's curriculum are usually grouped as basic science, mathematics, technical, communication, and social studies courses. Illustrative 2-year curriculums are given for electronics, metallurgy, ornamental horticulture, dental hygiene and nursing. A bibliography and list of persons who are involved in the development of the guide are included. (EM)

ED 027 418 08 VT 007 874
Popham, W. James
Performance Tests of Instructor Competence for Trade and Technical Education. Final Report.
California Univ., Los Angeles.
Spons Agency—Office of Education (DHEW), Washington, D.C.
Bureau No—BR-5-0004
Pub Date Jun 68
Contract—OEC-5-85-051
Note—150p.
EDRS Price MF-$0.75 HC-$7.60
Descriptors—Academic Achievement, Auto Mechanics, Behavioral Objectives, Electronics, Experimental Teaching, Performance Criteria, *Performance Tests, Post Testing, Pretesting, Questionnaires, *Teacher Evaluation, Teachers, Teaching Quality, *Test Construction, *Trade and Industrial Education, *Vocational Education Teachers

Two performance tests of teaching proficiency in the field of trade and industrial education were developed during this project, one in the field of auto mechanics (carburetion) and one in the field of electronics (power supplies). An assessment was made of each test's ability to distinguish between experienced teachers and the non-teacher with respect to their ability to achieve pre-specified instructional objectives. All subjects, teachers and non-teachers, were given sets of operationally defined objectives. They attempted to achieve goals during an instructional period of approximately 10 hours. Pre- and post-tests based explicitly on the objectives were given to each subject's pupils, and average class achievement was used as the index of the teacher's proficiency. Twenty-eight auto mechanics teachers and 28 non-teachers instructed over 1,200 pupils while 16 electronics and 16 non-teachers instructed over 700 pupils. Comparisons of pupil performance data revealed no systematic differences between the performance of the teacher and non-teacher group of either auto mechanics or electronics. These results were attributable to problems associated with the training of teachers as well as the reinforcement structures operating when they commenced training. (EM)

ED 027 419 VT 007 875
Tuttle, Francis
Summer Institute to Train Data Processing Teachers for the New Oklahoma State-Wide Computer Science System, Phase II. Final Report.
Oklahoma State Board for Vocational Education, Stillwater. Div. of Technical Education.
Spons Agency—Office of Education (DHEW), Washington, D.C.
Bureau No—BR-7-0822
Pub Date 29 Jan 69
Grant—OEG-1-7-070822-3486
Note—37p.
EDRS Price MF-$0.25 HC-$1.95
Descriptors—Computer Programs, *Computer Science Education, Curriculum, *Data Processing, Participant Satisfaction, Program Descriptions, Questionnaires, *Summer Institutes, System Analysis, *Teacher Education, Teacher Workshops, *Technical Education
Identifiers—Oklahoma State-Wide Data Processing System

Twenty-three instructors participated in an 8-week summer institute to develop their technical competency to teach the second year of a 2-year Technical Education Computer Science Program. Instructional material covered the following areas: (1) compiler languages and systems design, (2) cost studies, (3) business organization, (4) advanced programming, and (5) operating systems. In evaluating the results of the institute, the Programmer's Aptitude Test by the Psychological Corporation, New York, New York, was given at the beginning to establish each participant's aptitude in areas of numeric, verbal, and abstract reasoning relevant to programming. In addition, pretest and post-test scores were determined in the following areas: (1) business organization, (2) cost accounting, (3) systems, (4) COBOL, and (5) FORTRAN. Class schedules, textbooks, and a teacher-participant evaluation are included. Success of the institute led to the following conclusions: (1) Competent data processing and computer programming instructors, including teachers from other disciplines, can be trained in two summer institutes, and (2) Their success can be predicted from aptitude tests. Periodic follow-up instruction to teachers is recommended. Phase I of this study is described in ED 016 066. (MU)

ED 027 420 08 VT 007 876
German, Carl, Jr.
A Guide for Planning Facilities for Occupational Preparation Programs in Metallurgy Technology. Interim Report. Research 28.
Ohio State Univ., Columbus. Center for Vocational and Technical Education.
Spons Agency—Office of Education (DHEW), Washington, D.C.
Bureau No—BR-7-0158
Pub Date Mar 68
Grant—OEG-3-7-000158-2037
Note—111p.
EDRS Price MF-$0.50 HC-$5.65
Descriptors—Annotated Bibliographies, *Data Collection, Educational Equipment, *Educational Facilities, Educational Objectives, Educational Planning, *Educational Specifications, *Facility Guidelines, Facility Requirements, Information Needs, Questionnaires, Rating Scales, School Planning, Space Classification, Technical Education, Trade and Industrial Education
Identifiers—*Metallurgy Technology

EXAMPLE D

BIBLIOGRAPHIC ENTRIES
FOR CATALOG CARDS

Work Form
Section C-D

C. - D. Processing

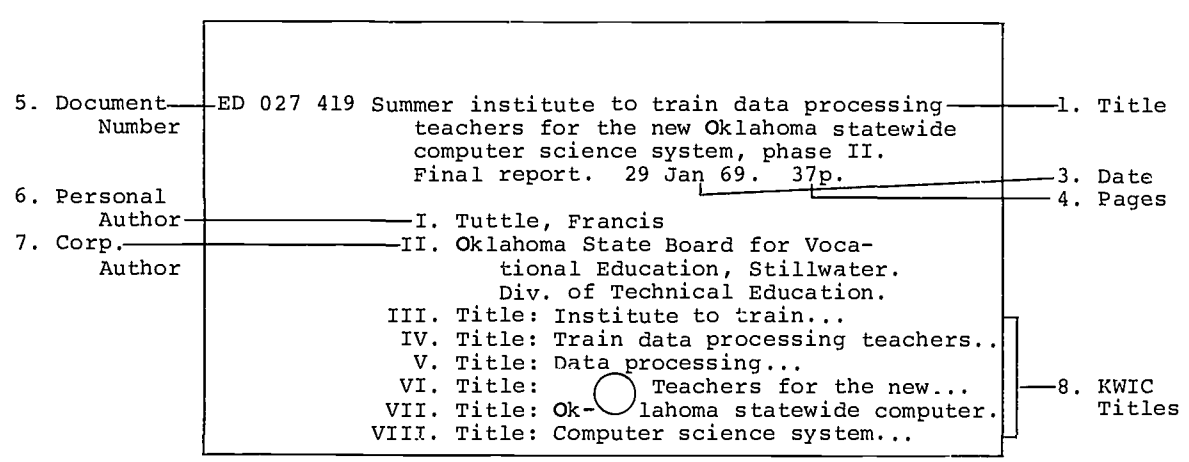
1. Title:
2. Edition:
3. Date:
4. Pages:
5. OE Classification:
6. Personal Author:
7. Corp. Author:
8. KWIC terms:
9. Cross References:
10. Cards to be made:

ERIC Resume

ED 027 419 VT 007 875

6. *Tuttle, Francis*
1. **Summer Institute to Train Data Processing Teachers for the New Oklahoma State-Wide Computer Science System, Phase II. Final Report.**
7. Oklahoma State Board for Vocational Education, Stillwater. Div. of Technical Education.
Spons Agency—Office of Education (DHEW), Washington, D.C.
Bureau No—BR-7-0822
3. Pub Date 29 Jan 69
Grant—OEG-1-7-070822-3486
4. Note—37p.
EDRS Price MF-$0.25 HC-$1.95
Descriptors—Computer Programs, *Computer Science Education, Curriculum, *Data Processing, Participant Satisfaction, Program Descriptions, Questionnaires, *Summer Institutes, Systems Analysis, *Teacher Education, Teacher Workshops, *Technical Education
Identifiers—Oklahoma State-Wide Data Processing System
Twenty-three instructors participated in an 8-week summer institute to develop their technical competency to teach the second year of a 2-year Technical Education Computer Science Program. Instructional material covered the following areas: (1) compiler languages and systems design, (2) cost studies, (3) business organization, (4) advanced programming, and (5) operating systems. In evaluating the results of the institute, the Programmer's Aptitude Test by the Psychological Corporation, New York, New York, was given at the beginning to establish each participant's aptitude in areas of numeric, verbal, and abstract reasoning relevant to programming. In addition, pretest and post-test scores were determined in the following areas: (1) business organization, (2) cost accounting, (3) systems, (4) COBOL, and (5) FORTRAN. Class schedules, textbooks, and a teacher-participant evaluation are included. Success of the institute led to the following conclusions: (1) Competent data processing and computer programming instructors, including teachers from other disciplines, can be trained in two summer institutes, and (2) Their success can be predicted from aptitude tests. Periodic follow-up instruction to teachers is recommended. Phase I of this study is described in ED 016 066. (MU)

Catalog Card Master



EXAMPLE E

TITLE PAGE

1. BASIC RADIO:
THEORY AND
SERVICING,
a Text-Lab Manual,

3d.
2. Third Edition

6. Paul B. Zbar,

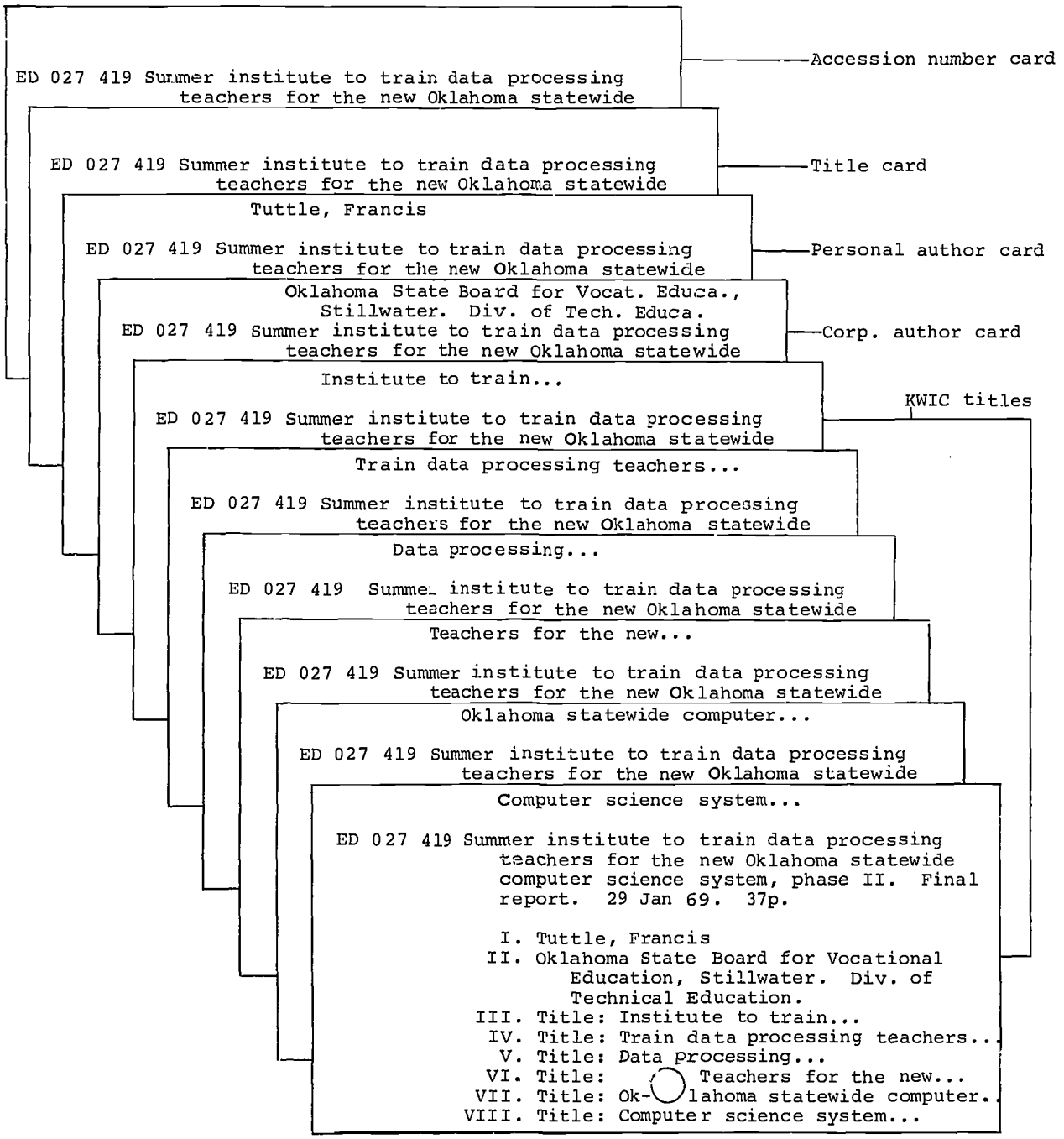
Head, Department of Electronics Technology
Voorhees Technical Institute

McGRAW-HILL BOOK COMPANY
New York
St. Louis
San Francisco
London
Sydney
Toronto
Mexico
Panama

3. 1969
4. 183p.
5. (17.503 Radio)
10. Cards - 5

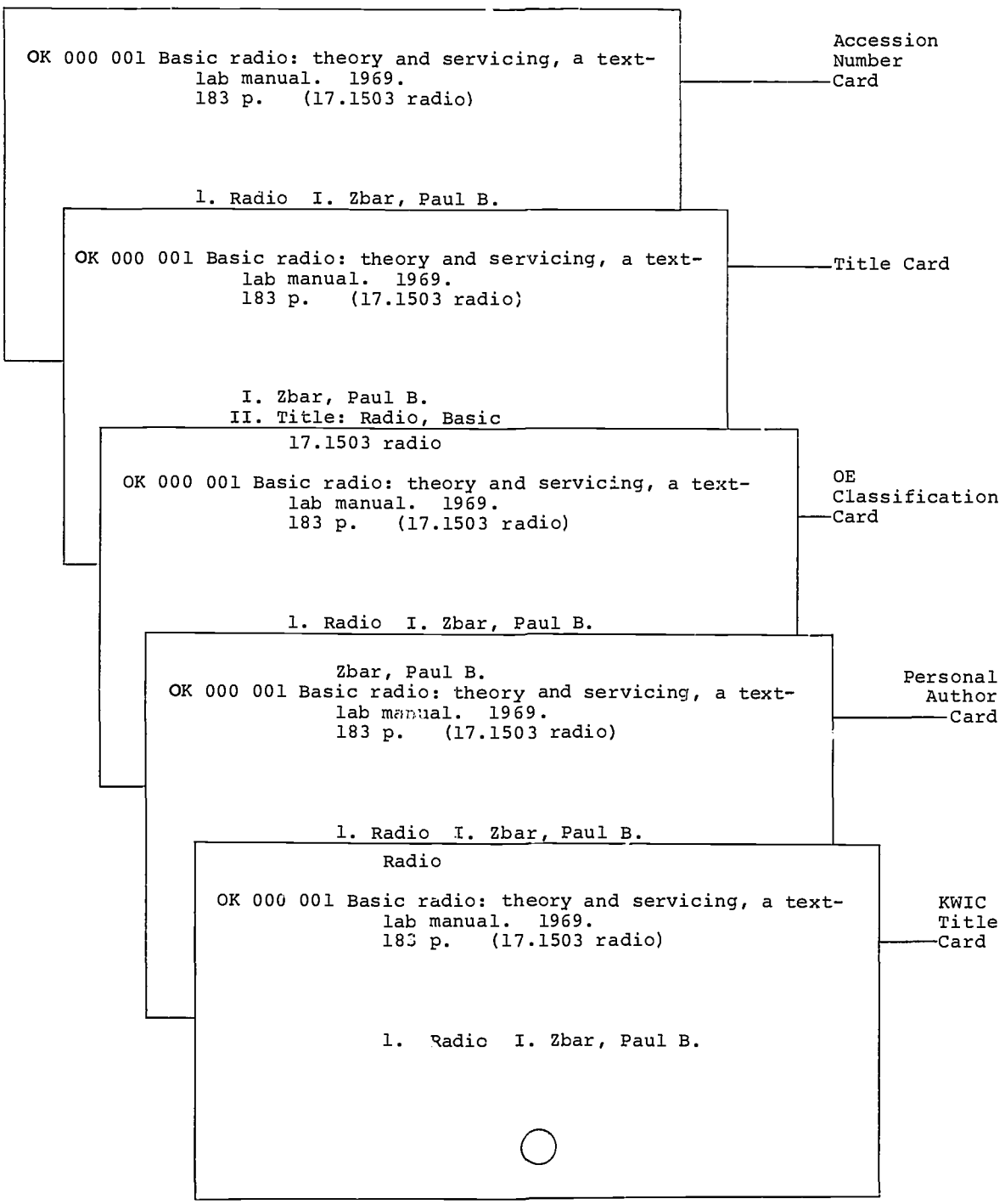
EXAMPLE F

"Set of Catalog Cards for ED 027 419"



EXAMPLE G

"Set of Catalog Cards for OK 000 001"



EXAMPLE H

FILES AND FILING

A. Files

1. Temporary Control Files

   a. Original slip is filed by control number when it is made out.

   b. Carbon copy of slip is filed by author or institution name.

   c. When document is completely processed, work form with a control number is used to pull temporary control slips. Slips are destroyed and work form filed by accession number.

2. Accession File

   Cards are filed alphabetically by letters and then numerically by numbers.

3. OE Classification File

   Cards are filed numerically by classification number.

4. Title File

   a. Cards are interfiled alphabetically.

   b. Two filing methods are:

      1) Word by word
         Example: Negro employment
                  Negro history
                  Negro literature
         ————→Negroes

      2) Letter by letter
         Example: Negro employment
         ————→Negroes
                  Negro history
                  Negro literature

   c. Since it is advisable to make this collection compatible with the ERIC Collection, the letter by letter filing method used by ERIC is recommended.

APPENDIX 5

GLOSSARY OF ACRONYMS USED IN THE GUIDE

AIM --	*Abstracts of Instructional Materials in Vocational and Technical Education*, published by VT-ERIC
ARM --	*Abstracts of Research and Related Materials in Vocational and Technical Education*, published by VT-ERIC
BR --	Bureau of Research (USOE)
CERIC --	Central ERIC
CFSTI --	Clearinghouse for Federal Scientific and Technical Information - is now NTIS (see below)
CIJE --	*Current Index to Journals in Education*
DATRIX --	Direct Access to Reference Information, University Microfilm
DITD --	Division of Information Technology (USOE/BR)
EDRS --	ERIC Document Reproduction Service
ERIC --	Educational Resources Information Center
GPO --	U.S. Government Printing Office
HC --	Hard copy
MF --	Microfiche
NAL --	National Agricultural Library, U.S. Department of Agriculture
NASA --	National Aeronautics and Space Administration
NCEC --	National Center for Educational Communication in the U.S. Office of Education
NTIS --	National Technical Information Service
RCU --	Research Coordination Unit
RIE --	*Research in Education*, published by the U.S. Government Printing Office

RISE -- Research and Information Services for Education, a Title III Center at King of Prussia, Pennsylvania

SDI -- Selective Dissemination System

SIE -- Science Information Exchange, service of the Smithsonian Institute

STAR -- *Scientific and Technical Aerospace Reports*, published by NASA

The Center -- The Center for Vocational and Technical Education at The Ohio State University

USGRDR -- *U.S. Government Research and Development Reports*

USOE -- U.S. Office of Education, Department of Health, Education and Welfare

VT-ERIC -- ERIC Clearinghouse on Vocational and Technical Education

ATTACHMENTS

ATTACHMENT 1

AVAILABILITY OF AIM

AIM is published quarterly (Fall, Winter, Spring, Summer). The first issue began Fall 1967. At this time the four issues for the period Fall 1967 - Summer 1968 and the AIM-ARM Annual Indexes are available only on microfiche or facsimile copy. Annual subscriptions are available beginning with Fall 1968. Microfiche or facsimile copy for all previous issues may be ordered from ERIC Document Reproduction Service, The National Cash Register Company, 4936 Fairmont Avenue, Bethesda, Maryland 20014. Please write to EDRS for order forms.

ED 013 337	Fall 1967 AIM	MF - $0.75 or HC - $ 9.35
ED 015 336	Winter 1967 AIM	MF - $1.00 or HC - $10.50
ED 017 745	Spring 1968 AIM	MF - $0.75 or HC - $ 9.95
ED 020 441	Summer 1968 AIM	MF - $0.75 or HC - $ 8.95
ED 022 064	AIM-ARM Annual Index 1967-68	MF - $0.50 or HC - $ 6.30
ED 023 936	Fall 1968 AIM	MF - $0.75 or HC - $ 9.30
ED 028 302	Winter 1968 AIM	MF - $0.75 or HC - $ 8.45
ED 030 769	Spring 1969 AIM	MF - $0.75 or HC - $ 8.70
ED 032 433	Summer 1969 AIM	MF - $0.75 or HC - $ 8.30
ED 034 075	Fall 1969 AIM	MF - $0.75 or HC - $ 8.90
ED 036 652	AIM-ARM Annual Index 1968-69	MF - $0.50 or HC - $ 5.80
ED 037 584	Winter 1969 AIM	MF - $0.75 or HC - $ 8.50
ED 041 159	Spring 1969 AIM	MF - $0.75 or HC - $ 8.40
ED 042 930	Summer 1970 AIM	MF - $0.75 or HC - $ 8.60

AVAILABILITY OF ARM

ARM is published quarterly (Fall, Winter, Spring, Summer). The first issue began Fall 1967. At this time the four issues for the period Fall 1967 - Summer 1968 and the AIM-ARM Annual Index, 1967-68 are available only on microfiche or facsimile copy. Annual subscriptions are available beginning with Fall 1968. Microfiche or facsimile for all previous issues may be ordered from ERIC Document Reproduction Service (EDRS), The National Cash Register Company, 4936 Fairmont Avenue, Bethesda, Maryland 20014. Please write to EDRS for order forms.

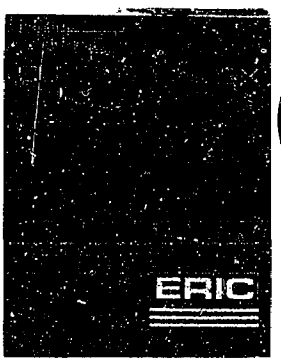
ED 013 336	Fall 1967 ARM	MF - $1.00 or HC - $10.60
ED 015 335	Winter 1967 ARM	MF - $0.75 or HC - $ 9.10
ED 016 875	Spring 1968 ARM	MF - $0.75 or HC - $ 9.10
ED 019 525	Summer 1968 ARM	MF - $1.25 or HC - $14.15
ED 022 064	AIM-ARM Annual Index 1967-68	MF - $0.50 or HC - $ 6.30
ED 022 970	Fall 1968 ARM	MF - $1.25 or HC - $14.10

ED 027 437	Winter 1968 ARM	MF - $1.00 or HC - $10.65
ED 030 000	Spring 1969 ARM	MF - $1.00 or HC - $10.40
ED 031 586	Summer 1969 ARM	MF - $1.00 or HC - $10.45
ED 036 652	AIM-ARM Annual Index 1968-69	MF - $0.50 or HC - $ 5.80
ED 033 247	Fall 1969 ARM	MF - $1.00 or HC - $10.40
ED 036 654	Winter 1969 ARM	MF - $1.00 or HC - $13.30
ED 039 367	Spring 1970 ARM	MF - $1.25 or HC - $16.20
ED 042 036	Summer 1970 ARM	MF - $1.00 or HC - $11.45
ED 042 929	AIM-ARM Annual Index 1969-70	MF - $0.75 or HC - $ 6.80

Subscriptions for hard copy of AIM or ARM may be initiated with the Fall 1968 issue, or subsequent issues. Send order indicating quarter and year that subscription is to begin to:

AIM-ARM
ERIC Clearinghouse
The Center for Vocational and Technical Education
1900 Kenny Road
Columbus, Ohio 43210

ATTACHMENT 2



Current Index to Journals in Education

Now in its second year of publication, CIJE is a monthly index that covers more than 550 educational periodicals. It was developed by the Educational Resources Information Center (ERIC) of the U.S. Office of Education and is published by CCM Information Corporation, a subsidiary of Crowell Collier and Macmillan, Inc.

Current Index to Journals in Education indexes approximately 1000 articles each month. It is a companion publication to *Research in Education* (RIE) also sponsored by USOE. *Starting with the January, 1970 issue, brief annotations outlining the scope and substance of each article are included.*

Other CIJE Features include:

- Main-entry section, subject index, author index, and index to source journals.
- Journals indexed are selected by a USOE-appointed panel; coverage is regularly reviewed and expanded. Professional selection, indexing, and annotating of articles by the 19 ERIC clearing houses. Each article is indexed under an average of five subject headings.
- Subject headings drawn from the *Thesaurus of ERIC Descriptors* and consistent with RIE.
- All entries in easy-to-read cap and lower case photo-composition format.
- Semi-annual and annual cumulations.
- Annual subscription price is $34 (12 issues). Semi-annual and annual cumulations, $35 (purchased with monthly issues, $30). Write for more information and a free sample issue.

CCM INFORMATION CORPORATION
A subsidiary of Crowell Collier and Macmillan
909 THIRD AVENUE, DEPT. XX, NEW YORK 10022

ATTACHMENT 3

HOW TO ORDER ERIC PUBLICATIONS

Purchase from: Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Title	GPO Order Number and Price
Research in Education ... Monthly Abstract Journal. Please send subscription orders separately from orders for other publications listed below.	Yearly Subscription Domestic $21.00 Foreign $26.25 Single Issues $ 1.75
Research in Education, 1967 Annual Index Reports	(Order by title) $3.25
Research in Education, 1967 Annual Index Projects ... Cumulative Indexes of first 14 issues of RIE November 1966-December 1967, 2,349 titles	(Order by title) $1.50
Research in Education, Annual Index Reports ... January-December 1968, 8,803 titles	(Order by title) $8.25
Research in Education, Annual Index ... January-December 1969. 10,453 titles	(Order by title) $6.25
Research in Education, Semi-Annual Index ... January-June 1970, 5,054 titles	(Order by title) $3.25
Rules for Thesaurus Preparation, September 1969	OE-12047 $ .20
Office of Education Research Reports, 1956-65, Resumes ... Abstracts of 1,214 research reports received by the Bureau of Research before the start of publication of RIE.	OE-12029 $1.75
Office of Education Research Reports, 1956-65, Indexes ... Indexes reports by author, institution, subject, and report numbers.	OE-12028 $2.00
ERIC Catalog of Selected Documents on the Disadvantaged. Number and Author Index ... 1,746 documents dealing with the special educational needs of disadvantaged, to 1966	OE-37001 $ .65
ERIC Catalog of Selected Documents on the Disadvantaged, Subject Index	OE-37002 $3.00
Pacesetters in Innovation, Fiscal Year 1967 ... Résumés of projects to advance creativity in education approved during fiscal year 1967 indexed by subject, local education agency, and project number. 907 documents covered.	OE-20103-67 $2.50
Pacesetters in Innovation, Fiscal Year 1968	OE-20103-68 $2.50
Pacesetters in Innovation, Fiscal Year 1969	OE-20103-69 $5.00
Manpower Research: Inventory for Fiscal Years 1966 and 1967 ... Collection by Interagency Committee on Manpower Research covering 392 documents.	OE-12036 $2.75
Manpower Research: Inventory for Fiscal Year 1968	OE-12036-68 $1.75
Manpower Research: Inventory for Fiscal Year 1969	OE-12036-69 $1.75
Selected Documents in Higher Education, Number and Subject Index ... Covers 845 documents.	Not Available from GPO Order from EDRS/NCR ED 012 110 $4.05 (HC) $ .50 (MF)
How To Use ERIC ... A graphic aid to the use of the ERIC system	OE 12037-C—$.35

ATTACHMENT 4

Thesaurus of ERIC Descriptors

New 1970 Edition

Here is the definitive vocabulary of education, developed and brought up-to-date by educators who review the literature in their field. The *Thesaurus* is the source of all subject headings used for indexing and for retrieval of documents and journal articles in the ERIC collection.

In addition, the *Thesaurus* will serve to give all educators an increased awareness of the language of their field. It is as useful for the active teacher, or the student of education, as it is for the information specialist.

New feature: Foreword by Dr. Frederick Goodman of the University of Michigan, entitled "The Role and Function of a Thesaurus in Education." This foreword brings to professional educators the insights of one of the leading experts in the field of vocabulary development and communication.

This hard cover edition of the *Thesaurus of ERIC Descriptors* supersedes previous paperback editions. All newly-assigned descriptors and hierarchical displays as of July, 1970 are included.

546 pages, hard cover, $8.95

To: CCM Information Corporation
a subsidiary of Crowell Collier and Macmillan, Inc.
909 Third Avenue, New York, New York 10022

☐ Please enter my order for the **Thesaurus of ERIC Descriptors** at $8.95.

NAME ..... TITLE .....

AFFILIATION .....

ADDRESS .....

CITY ..... STATE ..... ZIP .....

ATTACHMENT 5

ERIC MASTER FILES ON MAGNETIC TAPE

Under a special authorization by the Office of Education, LEASCO Systems & Research Corporation can now offer for public sale magnetic tape copies of the files of the Educational Resources Information Center (ERIC). Effective March 16, 1970, these tapes will be available only by purchase from LEASCO.

The ERIC files represent virtually complete coverage of current significant developments in educational research. The report literature is covered from 1966, and the journal literature from January 1969. These files have been assembled by a unique network of cooperating activities, including: 19 subject-specialized clearinghouses operated by universities and professional organizations; the Office of Education, DHEW; and several private contractors.

The requirement for access to the ERIC data base in machine-readable form exists both within the ERIC dissemination network and in other areas of the educational community. In order to meet this requirement in the most timely, equitable, and economic manner, the Office of Education, in keeping with its task of providing maximum utilization of its information at minimum cost to the Government, has determined that the entire user community will be best served by permitting open sale of the files in the form of magnetic tapes. On the strength of LEASCO's experience in large scale dissemination of magnetic tape files in a wide variety of formats and our familiarity with the ERIC System and program as operator of the ERIC Processing and Reference Facility, we have been selected to perform this task for the educational community.

The available files consist of:

REPORT RESUME FILES

These files consist principally of resumes of research reports filed by contractors and grantees on the results of funded educational research. All ED numbered documents announced in *Research In Education* (RIE) and other ERIC Publications will be found on the file. Each resume includes full descriptive cataloging, indexing, and an abstract—all of the information which appears in the sample RIE entry on the next page. As of the end of 1969, there were 31,623 report resumes on file, and the number is expected to grow at a rate of approximately 900 per month. Quarterly updates will be available. Most of these reports are available from EDRS* either on microfiche or in hard copy form.

JOURNAL ARTICLE RESUME FILES

These files consist of resumes of journal articles on educational research selected from over 500 education and education-related journals. All EJ numbered accessions announced in *Current Index to Journals in Education* (CIJE) will be found on the file. These resumes are in the same format as the ERIC report resumes, except that the abstract is replaced by a 30 to 50 word annotation when the title does not clearly indicate the subject matter of the article (see sample CIJE entry on the next page). As of the end of 1969, there were 11,702 journal article resumes on file, and the number is expected to grow at a rate of approximately 1500 per month. Quarterly updates will be available.

THESAURUS FILE

This file consists of the complete Thesaurus of ERIC Descriptors from which subject indexing terms are selected for both report resumes and journal article resumes. In addition to Main (postable) Terms, Use References and Scope Notes, it includes both hierarchical (Broader Term, Narrower Term) and Related Term cross-references. As of the end of 1969, there were 6878 terms (4650 Main Terms and 2228 Use References) on file, and the number is expected to grow at a rate of approximately 30 per month. Quarterly updates will be available.

*ERIC Document Reproduction Service
4936 Fairmont Avenue, Bethesda, Maryland 20014

These samples illustrate the information available on each of the files as it appears in the various publications which are produced from the ERIC Data Base.

REPORT RESUME

ERIC Accession Number—identification number sequentially assigned to documents as they are processed.

Author(s).

Title.

Organization where document originated.

Date published.

Contract or Grant Number—contract numbers have OEC prefixes; grant numbers have OEG prefixes.

Alternate source for obtaining documents.

EDRS Price—price through ERIC Document Reproduction Service. "MF" means microfiche; "HC" means hard copy. When listed "not available from EDRS" other sources are cited above.

Legislative Authority Code for identifying the legislation which supported the research activity (when applicable). *

Clearinghouse accession number.

Sponsoring Agency—agency responsible for initiating, funding, and managing the research project.

Report Number and/or Bureau Number—assigned by originator.

Descriptive Note.

Descriptors—subject terms which characterize substantive contents. Only the major terms, preceded by an asterisk, are printed in the subject index.

Identifiers—additional identifying terms not found in the Thesaurus of ERIC Descriptors.

Informative Abstract.

Abstractor's initials.

***ED 013 371** 64 **AA 000 223**
Norberg, Kenneth D.
Iconic Signs and Symbols in Audiovisual Communication, an Analytical Survey of *Selected Writings and Research Findings*, Final Report.
Sacramento State Coll., Calif.
Spons Agency—USOE Bur of Research
Report No.—NDEA-VIIB-449
Pub Date—15 Apr 66
Contract—OEC-4-16-023
Note—Speech given before the 22nd National Conference on Higher Education, Chicago, Ill., 7 Mar 66.
Available from—Indiana University Press, 10th and Morton St., Bloomington, Indiana 47401 ($2.95)
***EDRS Price—MF-$0.75 HC-$5.24** 129p.*
Descriptors—*Bibliographies, *Communication (thought transfer), *Perception, *Pictorial Stimuli, *Symbolic Language, Instructional Technology, Visual Stimuli.
Identifiers—Stanford Binet Test, Wechsler Intelligence Scale; Lisp 1.5; Cupertino Union School District.
The field of analogic, or iconic, signs was explored to (1) develop an annotated bibliography and (2) prepare an analysis of the subject area. The scope of the study was limited to only those components of messages, instructional materials, and communicative stimuli that can be described properly as iconic. The author based the study on a definition of an iconic sign as one that looks like the thing it represents. The bibliography was intended to be representative and reasonably comprehensive and to give emphasis to current research. The analysis explored the nature of iconic signs as reflected in the literature and research. • • • • (AL)

*The key to these codes appears in Research in Education.

THESAURUS ENTRIES

USE REFERENCE FROM NONPOSTABLE SYNONYM TO MAIN TERM

DOCTORAL DISSERTATIONS
USE DOCTORAL THESES

USED FOR RECIPROCAL OF USE REFERENCE

DOCTORAL THESES 460
UF DOCTORAL DISSERTATIONS

GROUP CODE

DOCUMENTATION 330

SCOPE NOTE

SN DOCUMENT GENERATION, PROCESSING, AND USE

NARROWER TERM

NT INFORMATION PROCESSING

BROADER TERM

BT INFORMATION SCIENCE

RELATED TERMS

RT ABSTRACTING
ABSTRACTS
BIBLIOGRAPHIES
CATALOGING
CATALOGS
CITATION INDEXES

A portion of the *Thesaurus of ERIC Descriptors* appears to the left with callouts identifying the elements of the display. In addition to the tape version, a hard bound printed version will be available June 15, 1970 from CCM Information Corporation, 909 Third Avenue, New York, New York 10022. Price - $7.95 per copy.

JOURNAL ARTICLE RESUME

EJ Accession Number

Clearinghouse Accession Number

Title

Author

Volume and Issue Number

Abbreviated Journal Title*

Pagination

Publication Date

Descriptors
(Subject terms which characterize substantive contents. Only the major terms, preceded by an asterisk, are printed in the subject index.)

Identifiers
(identifying terms not found in Thesaurus of ERIC Descriptors)

Annotation

Annotator's Initials

EJ 012 586 VT 500 916
New Policy Encourages Innovation
Noakes, Harold L., *Agr Educ Mag* v42 n7, pp172-173, Jan '70
*Agricultural Education, *Summer Programs, *Financial Support, *Program Descriptions, Educational Innovation, State Aid, [*New York]
New York State provides 100 percent financial assistance to schools for approved innovative activities and demonstration projects conducted during the summer months. Reported are results of projects funded in supervision of instruction of adult groups. (DM)

*A list of these with full titles appears in Current Index to Journals in Education

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SERVICE DESCRIPTION

Formats

The files are available on either 9-track tapes (1600 or 800 BPI) or 7-track tapes (800 or 556 BPI), in the form of IBM System/360 Operating System variable length records. Initial shipments will be accompanied by a full description of the information on the tapes, including: graphic symbols used and their hexadecimal equivalents; field identifiers; and label, header, and tag information necessary for use of the tapes.

Options

Service will be provided under one of two options as follows:

OPTION 1-- Leasco will duplicate the ordered files on high quality, previously unused tapes, with a tape replacement or reduplication guarantee (See Guarantee and Limit of Liability below) and air mail the duplicated tapes postage prepaid to any point in the United States or its possessions. Tapes will be mailed to the customer within 7 working days of our receipt of the order.

PRICE $80.00 per tape reel

OPTION 2-- Leasco will duplicate the ordered files on previously unused tapes (so certified) supplied by the customer at his own risk and postage prepaid to Leasco's Bethesda, Maryland office. This option includes air mail return postage as in Option1 and a limited reduplication guarantee. (See Guarantee and Limit of Liability below) Tapes will be mailed to the customer within 14 working days of receipt of the order or a sufficient number of usable tape reels, whichever is later.

PRICE $50.00 per tape reel

Under either of the above options, Foreign Postage, Special Delivery, or Air Express charges will be billed at cost in addition to the basic price.

Number of Tapes

As of March 1970, the report resume file requires 2 tape reels at 1600 BPI, 3 tape reels at 800 BPI (7- or 9-track) and 6 tape reels at 556 BPI. The journal article resumes are on a single tape reel regardless of density, and the thesaurus is on a single tape at all densities except 556 BPI which requires two tape reels. Orders for the basic file will include data through the previous publication quarter. That is, orders received prior to May 31 will include information through the March issue of the publication(s) for which files are ordered. Orders received on or subsequent to June 1 will include information through the June issue, and so on. Customers ordering under Option 2 should note that it is impossible to predict with any accuracy the point at which an additional tape will be required for a given file. Since additional delay may be encountered if insufficient tapes are forwarded, and since tapes not required for duplicating ordered files must be returned at the customer's expense, it is recommended that subsequent to May 31, 1970, the number of tapes required be verified by calling ERICTAPE information (301 656-9723).

Updates

Update-only tapes will be available for the report resume and journal article resume files on a quarterly basis. Each update tape will include the information from three issues of the particular publication (Jan-Mar, Apr-Jun, Jul-Sep, Oct-Dec), and will be mailed on standing order within seven working days (Option 1) after the first day of the last month of the quarter. Standing orders under Option 2 will be filled within 14 working days of the first day of the last month of the quarter, providing the required tapes are received by that day. Quarterly updates will require no more than one tape per file.

Updated tapes of the entire Thesaurus will also be available on a quarterly basis, on the same schedule as the resume files. This currently requires one tape except at 556 BPI which requires two tapes.

GUARANTEE AND LIMIT OF LIABILITY

The following constitutes Leasco's entire guarantee and limit of liability.

OPTION 1

If a tape (or tapes) prove unusable because of defects in the tape(s) or in the duplication process, or because information (which is on the master files at the time of extraction) is missing from the duplicated tape(s), upon prepaid return of the defective tape(s) with a certification by the customer that the tapes are unusable, Leasco will reduplicate the missing or unusable information on previously unused tapes and return the reduplicated tapes to the customer at no additional cost. If the reduplicated tapes still cannot be used on the customer's equipment, upon prepaid return of the unusable tape(s), (or, on initial or full data base orders only, the entire set, at the customer's option) with appropriate certification of unusability, Leasco will refund the entire purchase price of the returned tapes.

OPTION 2

If the tapes supplied by the customer are previously unused and a certification to that effect accompanies the tape shipment, Leasco will, upon prepaid return of tape(s) unusable because of defects in the duplication process or because information (which is on the master files at the time of extraction) is missing, reduplicate the missing or unusable information on the tape(s) at no additional cost. If the reduplicated tape(s) still cannot be used on the customer's equipment, upon receipt of certification to that effect, Leasco will refund the purchase price of the unusable tapes. However, Leasco can assume no obligation for replacement or reduplication of defective, previously used, or uncertified tapes. Tapes received by Leasco in damaged condition will be returned to the customer at his expense, and the order will be held pending replacement of such damaged tapes or cancellation. In the latter case, the unused tapes will be returned at the customer's expense.

IN NO EVENT SHALL LEASCO OR THE GOVERNMENT BE LIABLE FOR ANY INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, SUCH AS, BUT NOT LIMITED TO, LOSS OF ANTICIPATED PROFITS OR OTHER ECONOMIC LOSS, IN CONNECTION WITH, OR ARISING OUT OF THE EXISTENCE OF, THE FURNISHING, FUNCTIONING OR THE USE OF ANY TAPE PROVIDED FOR IN THIS AGREEMENT EXCEPT AS EXPRESSLY PROVIDED UNDER OPTION 1 OR OPTION 2 ABOVE. LEASCO MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, AS TO ANY MATTER WHATSOEVER, INCLUDING THE CONDITION OF THE TAPE, ITS MERCHANTABILITY OR ITS FITNESS FOR ANY PARTICULAR PURPOSE.

LEASCO Systems & Research Corporation
ATTN: ERICTAPES
4833 Rugby Avenue, Bethesda, Maryland 20014

Please forward copies of the ERIC Master Files as indicated below to:
Shipping Address

Name _____

Organization _____

Street _____

City & State (Country) _____ ZIP

Authorized Signature _____

Position _____

Billing Address (if different):

Name _____

Organization _____

Street _____

City & State (Country) _____ ZIP

ORDER OPTIONS

OPTION 1—Files on LEASCO-supplied tapes @ $80.00 per tape
OPTION 2—Files on customer's unused, certified tapes @ $50.00 per tape

FILES REQUIRED

	Report Resumes	Journal Article Resumes	Thesaurus
Single Orders			
Data Base Full Set	☐	☐	☐
Update Only	☐	☐	
Standing Orders			
Data Base Full Set plus updates *	☐	☐	☐
Updates only *	☐	☐	

TAPE FORMAT

9-track: ☐1600 BPI ☐800 BPI
7-track: ☐800 BPI ☐556 BPI

SHIPPING

☐ AIR MAIL—U.S.
☐ AIR MAIL—FOR. /
☐ AIR EXPRESS /
☐ SPEC. DELIV. /
/ Extra Cost

* to continue thru calendar year 197__

OPTION 1—LEASCO will provide files on high-quality, unused tapes with reduplication guarantee
OPTION 2—LEASCO will duplicate files on customer supplied, certified previously unused tapes with limited reduplication guarantee
Invoice Terms—30 days net
Standing Orders are cancellable on 30-days notice

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ATTACHMENT 6

DATRIX

DIRECT ACCESS TO REFERENCE INFORMATION: A XEROX SERVICE

Academic and nonacademic researchers can now put to work for themselves a computerized information retrieval system for quick and easy access to a vast storehouse of knowledge: tens of thousands of doctoral dissertations written in all fields.

Named DATRIX ("Direct Access to Reference Information: a Xerox Service"), the unique service is a development of University Microfilms, a Xerox company, and a pioneer in services for libraries and scholars.

Since 1938 University Microfilms has been microfilming most of the dissertations written by doctoral candidates in North America. The number of these originally researched documents has climbed to more than 126,000 and is currently being increased at a rate of 18,000 annually from nearly 200 institutions.

The potential usefulness of this immense store of information to scholars as well as to researchers in business, industry and government is beyond dispute. There are obvious benefits in the stimulative influence of being able to share basic research and having assurance of not duplicating work already done by others.

What DATRIX Can Do . . .

DATRIX is an information retrieval system that addresses itself directly to the needs of the individual researcher, finally freeing you from the frustration and tedium of bibliography compilation or, just as important, making it convenient for you to assess the wealth of useful data in doctoral dissertations.

DATRIX can be every researcher's timesaving, cost-saving information development tool. It quickly takes stock of the entire Dissertation Abstracts file and accurately pinpoints for you any dissertation or group of dissertations pertinent to your particular field of interest.

How DATRIX Works . . .

DATRIX is simple in operation even though its data base comprises the majority of all dissertations published since 1938 to the current month. To enable it to hunt most effectively and economically throughout the expansive information area, the DATRIX computer's memory is enriched with a constant input of key words

derived from the titles, author's selected subject headings and other descriptive data.

What YOU Do * * *

Submit your order for a search with the assurance that each one will be checked against our own copy of the updated Key Word List. We recommend that you supply related words from your own vocabulary and allow us to amend the structure of the query order to your best advantage.

A clearly descriptive summary of your subject field or your research goal helps us to search for the most relevant references for you.

What You GET * * *

Bibliographies are sent to you as promptly as possible after the computer search. Each reference in the bibliography includes the complete title of the dissertation, author's name, university at which it was accepted, date of publication, and the page and volume of Dissertation Abstracts where the dissertation is listed. In addition, price information is shown so that a microfilm or xerographic copy of the complete dissertation desired can be ordered from University Microfilms. An order form accompanies the bibliography, enabling you to conveniently request complete dissertations according to your needs.

What It Costs * * *

The basic fee for a DATRIX inquiry is $10 and this includes the first 60 (or less) references in the bibliography. Additional references are 10 cents each.

ATTACHMENT 7

HOW TO ORDER ERIC DOCUMENT REPRODUCTIONS

Purchase from: ERIC Document Reproduction Service
National Cash Register Company
4936 Fairmont Avenue
Bethesda, Maryland 20014

Title	Cost of hard copy per page	Number in Document Microfiche Collections	Cost of Collections
Reports in Research in Education for 1967	.05	2,349	$ 480
Reports in Research in Education for 1968	.05	7,458	1,470
Reports in Research in Education for 1969	.05	15,873	1,746
Total for all reports			3,696
Office of Education Research Reports, 1956–65	.05	1,214	495
ERIC Catalog of Selected Documents on the Disadvantaged	.05	1,746	410
Pacesetters in Innovation, Fiscal Year 1966	.05	1,075	180
Pacesetters in Innovation, Fiscal Year 1967	.05	907	215
Pacesetters in Innovation, Fiscal Year 1968	.05	572	140
Selected Documents in Higher Education	.05	845	190
Manpower Research, Inventory for Fiscal Years 1966 and 1967	.05	392	100
Manpower Research, Inventory for Fiscal Year 1968			
Group I *	.05	81	35
Group II **	.05	202	55
Manpower Research, Inventory for Fiscal Year 1969	.05	474	70
Total for all ERIC special collections			$1,896
Grand total			$5,586

All individual microfiche continue to be 25 cents each.

Note: A standing order for all microfiche of reports cited in monthly issues of **Research in Education** is currently about $150.

When ordering from the ERIC Document Reproduction Service, the following information should be furnished:
The ED numbers of the desired documents (titles need not be given).
The type of reproduction desired—hard copy or microfiche.
The number of copies ordered.

"HC" stands for hard copy—reproduction on paper in easy-to-read form. "MF" stands for microfiche—reproduction on a 4x6 inch sheet of film with up to 70 images, each representing an 8 x 11½ inch sheet of paper. Microfiche readers, available from many manufacturers, are required to enlarge the images for reading purposes.

To order hard copy reproductions from issues of **Research in Education** prior to March 1969, increase the price shown in the document résumé entry by 25 percent.

Special note: The full texts of items cited in the Project Section of **Research in Education** are not available for purchase from the ERIC Document Reproduction Service.

Payment must accompany orders totaling less than $5. Add a handling charge of 50 cents to all orders except full document collections. The ERIC Document Reproduction Service is registered to collect sales taxes. Orders from States which have sales tax laws should include payment of the appropriate tax or tax exemption certificate.

Foreign orders: A 15-percent service charge, calculated to the nearest cent, must accompany orders from outside the United States, its territories, and possessions except Mexico and Canada. Export charges are eliminated completely on individual orders under $50.00 from Canada and Mexico; the 15% service charge applies however, on all orders over $50.00. These service charges are applicable to orders for both microfiche (MF) and hard copy (HC).

* This group includes documents already in the ERIC system which are available to recipients of standing orders.

** This group represents documents new to the ERIC system.

ATTACHMENT 8

WILLIAMS AND WILKINS VS THE UNITED STATES GOVERNMENT*

Case 73.68 in the United States Court of Claims is Williams and Wilkins vs the United States Government (National Institutes of Health Library and the National Library of Medicine). It is destined to become a landmark case in copyright law - at least until the Congress writes and passes a revision bill to replace the Copyright Act.[1] The 91st Congress has not acted on revision and the prospects for the enactment of a general revision bill by the next Congress are very poor at this time.[2] Meantime, the Williams and Wilkins Case is inexorably moving towards a decision.

The case, an infringement case, initiated in June 1968, was heard by Commissioner James F. Davis between September 9th and September 16th. It is alleged by the plaintiff that the U.S. Government infringed plaintiff's copyright by copying seven articles from periodicals registered under the Copyright Law by the plaintiff. An eighth count, meant to cover any other copies made from plaintiff's periodicals not specifically mentioned in the petition, was dropped during pre-trial proceedings. Commissioner Davis will report his findings and recommendations to a three judge panel sometime around the first of next year. The panel will then render a verdict which could be appealed to the Supreme Court.

Because the Government is the defendent in this case, Section 1498(b) of Title 28 of the U.S. Code provides "the exclusive remedial action" which a copyright owner may take against the United States. This means that plaintiff can recover damages from the United States for the specific infringements if he prevails. However, he cannot estop (prevent) NIH, NLM or any other Federal operation from continuing to copy his copyrighted works regardless of the outcome of the case.

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*Sophar, Gerald J., "Williams and Wilkins vs the United States Government," *Newsletter of the American Society for Information Science*, Vol. 9, No. 5 (September-October, 1970), pp. 1, 4.

[1]Copyright Act of 1909 (Third and last general revision; Title 17 of the U.S. Code 1947 [codification of Copyright Act]).

[2]Recent unsuccessful attempts to write a revision bill are: S. 543, 91st Cong., 1st Sess. (1969); and see S. 597, H.R. 2512, 90th Cong., 1st Sess. (1967); also H.R. 11,947, H.R. 12,354, S. 3008, 88th Cong., 2d Sess. (1964); H.R. 4347, H.R. 5680, H.R. 6831, H.R. 6835, S. 1006, 89th Cong., 1st Sess. (1965).

Because so many librarians, information scientists and others concerned with generating, transferring and using information are interested in its outcome, it seems to be of more than casual importance that the details of this case and its possible consequences be understood. At issue, according to Alan Latman, Counsel for Williams and Wilkins, is the question of the expressed rights of the registered copyright owner who has complied in every detail with the requirements of the Copyright Act; that is, the material in question was registered and, printed according to the requirements of Title 17, published and offered for sale. In addition, Williams and Wilkins gave notice and asked for royalties from the Government when it became aware that NIH and NLM were copying articles from Williams and Wilkins periodicals.

Under Title 17, the owner of a copyright in a literary work is granted by the law the exclusive right to print, reprint, copy, sell, and distribute the work. The only exception to these rights has been the series of "fair use" decisions by the courts which have become a part of the law. Neither the plaintiff nor the defendent seems to have been inclined to argue the case too extensively on the fair use principle. Williams and Wilkins claims the Government infringed by copying, and does not even argue that the copying exceeded fair use. It simply assumes that the copying of an article from a periodical exceeds any prior court definition of fair use.

The Government, on the other hand, in its response, seems to have relegated the fair use defense to a minor role. It is the last of its written answers to the plaintiff's charges of infringement.

The Government's defenses were interesting and varied. One of the more interesting ones was an effort by the defense counsel to show that the plaintiff did not have a real party interest in the case. That is, it is the author who apparently has been careless of his rights, who should be bringing the action or, at least, joining the copyright holder in the action. A motion for dismissal on these grounds was rejected by the Commissioner, who stated that even if a third party equity (the authors) could be shown, it could not prevail against the legal (registered copyright) owner of the property.

Those who are interested in the case because they are librarians or information center managers should be aware that the main thrust of the Government's defense is that it is the Government, and that NIH and NLM have special responsibilities. The five key defense arguments are listed below:

1. All the allegedly infringed works resulted from major grant support from the PHS, NIH, and HEW.

2. This support carries with it an implied license in fact and law to produce photocopies for officials, employees, and others.

3. NLM, under the Act of August 3rd, 1956, 70 Stat. 960 (42 U.S.C. 5276) is required to make available to public and private agencies, organizations, and institutions, and individuals, materials pertinent to medicine through photographic and other copying procedures.

4. The Act of July 1st, 1944, 58 Stat. 691 (42 U.S.C. 5241) makes HEW and NIH responsible to conduct research, investigate, experiment, etc. in medicine and bio-medicine.

5. The imposition upon the defendent of liability for infringement of statutory copyright for providing the aforesaid copying services (of NIH and NLM) to its scientists and medical researchers will thwart, hinder, and impede the performance of the statutory mission of NIH and will not serve to "promote the progress of science and the useful arts."[3]

The defenses were emphasized by defense counsel through a number of witnesses.

The allegedly infringed articles were copied from four of the 37 copyrighted journals published by Williams and Wilkins. Some of the journals are owned and copyrighted by the publishers. The remainder--26 in number--are published in conjunction with professional societies under a variety of contractual arrangements. Thirteen of the societies hold their own copyright, and 13 allow the publisher to copyright.

Williams and Wilkins was most anxious to establish that, while it had brought suit for infringement, the harm being done by photocopying was not only to itself, but also to the societies for whom they publish. On the other hand, the defense tried to show that the societies and the authors were pleased with the photocopying services of NLM, and the objectives of these services were to enhance the widest dissemination of the scientific content of the articles copied.

On the last day of the trial, defense called, as an expert witness, Mr. Robert Blum, a consulting economist with extensive credentials as a Government economist, consultant to various utilities, the aluminum industry, etc., but with no knowledge of the publishing industry. Plaintiff's counsel objected on the grounds that the witness showed no expertise in publishing; and while the Commissioner agreed with counsel, he stated that he wanted to hear the reasons for bringing the witness and would

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[3] Article I, Section 8, U.S. Constitution.

decide upon reading the transcript on the relevancy of his testimony.

Essentially, Mr. Blum's testimony intended to show that, based on the 1958 Gross National Income, the Report of the President's Council of Economic Advisors and similar national economic documents, and Williams and Wilkins tax returns during the period of the ascendency of electrostatic copying, the plaintiff's business grew at a somewhat greater rate than the national growth. Thus, the plaintiff, according to defense counsel, is not harmed in the marketplace by NIH's and NLM's photocopying services.

Almost every discussion about photocopying and copyright eventually brings onto the table the 1953 "Gentleman's Agreement" between the Joint Committee on Materials for Research of the American Council of Learned Societies and the Social Science Research Council and the National Association of Book Publishers. This case was no different. The agreement, as will be recalled, states that a single photographic reproduction of a part of a copyrighted work for the purpose of research is acceptable.

Counsel for the plaintiff objected to the relevancy of the Agreement because the Association no longer exists and because organized, systematic copying such as the NLM photocopying service is a far cry from the kind of photocopying that was going on in 1935. The Commissioner upheld the objection. Regardless of the outcome of the case, it is doubtful that the Agreement will receive much attention in any future copyright discussions.

It is tempting to attempt to predict the decision in this case. It is safer to take refuge in several possibilities and to make a few comments.

If the court finds for the Plaintiff, NLM could choose to continue its photocopying service, awaiting the next infringement action by Williams and Wilkins or some other publisher. However, it is highly unlikely that the Executive Branch would permit this to occur.

If the court finds for the defendent, it will, in all probability, do so, because of the special position and responsibility of the NIH and NLM Libraries, and not because of the fair use principle. Thus, the average library, unless it should prove to have a position analagous to NIH or NLM, would still have to abide by the Copyright Law.

Finally, a strong possibility exists that the case may finish up in the Supreme Court, where the Court may make its decision on wider considerations than just the facts and the law. In this case, no predictions are attempted.

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